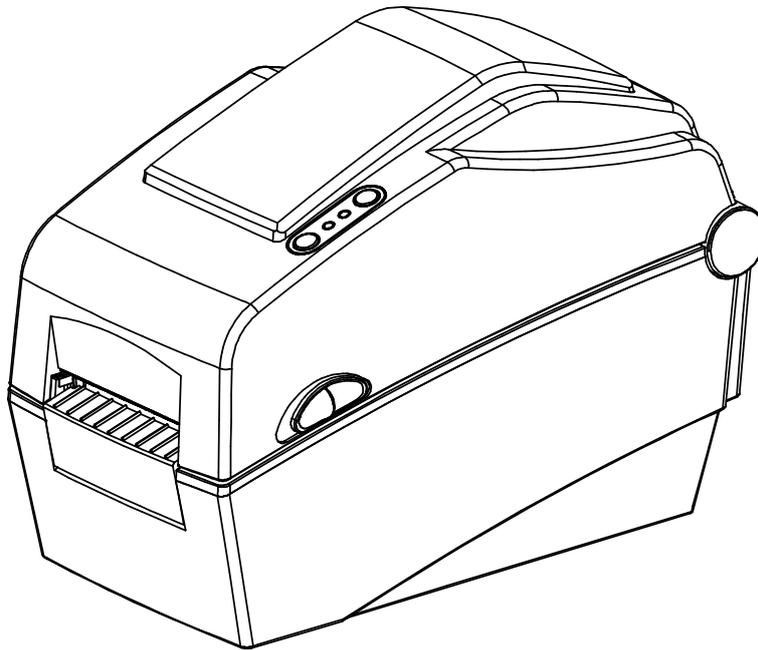


BIXOLON®

Service Manual Label Printer

Ver. 1.03

**SLP-DX220 / DX220E
SLP-DX223 / DX223E**



<http://www.bixolon.com>

■ Table of Contents

- 1. Precaution Statements.....5**
 - 1-1 Safety Precautions5
 - 1-2 Servicing Precaution6
 - 1-3 Precaution for Electrostatically Sensitive Devices (ESDs)7
 - 1-4 Operational Precautions7

- 2. Operating Instruction and Installation.....8**
 - 2-1 Installation8
 - 2-1-1 SMPS Installation.....8
 - 2-1-2 Interface Cable Installation (STD Model)8
 - 2-1-3 Interface Cable Installation (Ethernet Model)8
 - 2-1-4 Paper Roll Installation9
 - 2-2 Operations10
 - 2-2-1 Using the operation panel10
 - 2-2-2 Button Operations10
 - 2-2-3 LED indicator for various printer statuses11
 - 2-2-4 Test printing11
 - 2-2-5 Self-Test.....12
 - 2-2-6 Printer setting using utility program.....13
 - 2-2-7 Stand-alone Configuration Mode14
 - 2-2-8 Pause/Cancel.....15
 - 2-2-9 Media Calibration16
 - 2-2-10 Smart Media Detection16
 - 2-2-11 Gap Sensor Auto Calibration Mode17
 - 2-2-12 Black Mark Sensor Auto Calibration Mode17
 - 2-2-13 Manual Calibration Mode18
 - 2-2-14 Cover Closing Mode19
 - 2-2-15 Data Dump Mode19
 - 2-2-16 Factory Reset.....19
 - 2-2-17 Peel-Off (Option)20
 - 2-2-18 Using Fan-Fold Paper21
 - 2-2-19 Auto Cutter (Option)22
 - 2-2-20 Real-Time Clock (Option)22

- 3. Product Specifications.....23**
 - 3-1 Appearance.....23
 - 3-1-1 Printer Dimensions(mm)23
 - 3-1-2 AC/DC Adapter Dimension(mm)23
 - 3-1-3 Feature Locations24
 - 3-2 General Specifications26
 - 3-2-1 Hardware Specifications26
 - 3-2-2 Function Specifications27
 - 3-3 Thermal Printer Specification.....28
 - 3-3-1 Printer Specification28
 - 3-3-2 Character Specification28
 - 3-3-3 Barcode Specification28
 - 3-3-4 Paper Specification29
 - 3-3-5 Warranty and Environment Specification30
 - 3-3-6 TPH (Thermal Printer Head) Specification30
 - 3-3-7 Auto Cutter Specification30
 - 3-3-8 Media Sensor30
 - 3-3-9 Other Component Specification31
 - 3-4 SMPS Specification31
 - 3-4-1 SMPS (Switching Mode Power Supply) Specification31
 - 3-4-2 SMPS Output Connector31

3-5 Interface Specification	32
3-5-1 RS-232C Serial Interface	32
3-5-2 USB Interface.....	34
3-5-3 Ethernet I/F	35
3-5-4 WLAN.....	36
4. Hardware	37
4-1 Wiring Diagram	37
4-1-1 SLP-DX220 Board Wiring Diagram	37
4-1-2 SLP-DX220E Board Wiring Diagram	38
4-2 Block Diagram.....	39
4-3 Special Circuit Description	40
4-3-1 Power Circuit.....	40
4-3-2 Reset Circuit.....	41
4-3-3 RS232C Communication Block Diagram	42
4-3-4 USB Communication Block Diagram	43
4-3-5 Ethernet Communication Block Diagram	43
4-3-6 Thermal Pinter Circuit	44
5. Disassembly and Assembly	45
5-1 CASE-LOWER Block.....	45
5-2 MAIN-PCB Block.....	46
5-3 UPPER Block.....	47
5-3-1 UPPER-ASS'Y Block	47
5-3-2 CASE-UPPER Block.....	48
5-3-3 COVER-TOP Block.....	49
5-3-4 TPH-ASS'Y Block	50
5-3-5 TPH Block	50
5-3-6 DOOR-LOCK and ROLLER-PAPER Block	52
5-3-7 Etc Block	53
5-4 FRAME-LOWER Block	54
5-4-1 HOLDER-PAPER Block.....	54
5-4-2 MOTOR Block.....	55
5-4-3 GUIDE-PAPER (GAP-SENSOR) Block.....	56
5-4-4 BLACK-MARK-SENSOR and PLATEN-ROLLER Block	57
6. Cleaning Head.....	58
6-1 Cleaning Head	58
6-2 Cleaning Sensors, Roller or/and Paper Path.....	59
7. Troubleshooting	60
7-1 Trouble shooting flow chart.....	60
7-1-1 LED 1 dose not light.....	61
7-1-2 LED 2 is red blink	62
7-1-3 LED 2 is orange blink	63
7-1-4 Self test is not normal	64
7-1-5 Data from host is not printed normal.....	65
7-2 Power Problem	66
7-3 System Problem.....	67
7-4 Panel PBA and Media Sensor Problem.....	68
7-5 Thermal Printer Head and Step Motor Problem	69
7-6 RS-232C Serial Communication Problem	70
7-7 USB Communication Problem	71
7-8 Ethernet Communication Problem.....	72

■ About

About this Manual

This Service Manual describes how to perform hardware service maintenance for the BIXOLON SLP-DX220, SLP-DX220E, SLP-DX223, SLP-DX223E Label Printer.

Notes

Notes may appear anywhere in the manual. They draw your attention to additional information about the item.

Precaution symbols



Indicates a Safety Precaution that applies to this part component.



Indicates the part or component is an electro-statically sensitive device. Use caution when handling these parts.

■ Overview of this Label Printer

This System Label Printer is a ATMEL processor-based system, using a 32bit-atmel Processor.

This Service Manual provides the technical information for many individual component systems, circuits and gives an analysis of the operations performed by the circuits. If you need more technical information, please contact our service branch or R&D center.

All information in this manual is subject to change without prior notice. Therefore, you must check the correspondence of your manual with your machine. No part of this manual may be copied or reproduced in any form or by any means, without the prior written consent of BIXOLON Co., Ltd.

1. Precaution Statements

1-1 Safety Precautions

1. Be sure that all of the built-in protective devices are replaced. Restore any missing protective shields.
2. When reinstalling the chassis and its assemblies, be sure to restore all protective devices including: nonmetallic control knobs and compartment covers.
3. Make sure that there are no cabinet openings through which people – particularly children – might insert fingers and contact dangerous voltages. Such openings include excessively wide cabinet ventilation slots and improperly fitted covers and drawers.
4. Leakage Current Hot Check:
WARNING: Do not use an isolation transformer during this test.
Use a leakage-current tester or a metering system that complies with American National Standards Institute (ANSI C101.1, Leakage Current for Applications), and Underwriters Laboratories (UL Publications UL1410, 59.7).
With the unit completely reassembled, plug the AC line cord directly into a 100VAC or 240VAC outlet of the Adaptor.
With the unit's AC switch first in the ON position and then OFF, measure the current between a known Earth ground (metal water pipe, conduit, etc.) and all exposed metal part, including: metal cabinet, frame, and screw-heads and printer. The current measure should not exceed 0.1 milliamp. Reverse the power-plug prong in the AC outlet and repeat the test.
5. Design Alteration Warning:
Never alter or add to the mechanical or electrical design of the ECR. Unauthorized alterations might create a safety hazard. Also any design changes or additions will void the manufacturer's warranty.
6. Components, parts and wiring that appear to have overhead or that are otherwise damaged should be replaced with parts that meet the original specifications. Always determine the cause of damaged or overheating and correct any potential hazards.
7. Observe the original lead dress, especially near the following areas: sharp edges, and especially the AC and high voltage supplies. Always inspect for pinched, out-of-place, or frayed wiring.
Do not change the spacing between components and the printed circuit board. Check the AC power cord for damage. Make sure that leads and components do not touch thermally hot parts.
8. Product Safety Notice:
Some electrical and mechanical parts have special safety-related characteristics, which might not be obvious from visual inspection. These safety features and the protection they give might be lost if the replacement component differs from the original-even if the replacement is rated for higher voltage, wattage, etc.
Components that are critical for safety are indicated in the circuit diagram by shading, () or ().
Use replacement components that have the same ratings, especially for flame resistance and dielectric strength specifications. A replacement part that does not have the same safety characteristics as the original might create shock, fire or other hazards.

CAUTION.

Danger of explosion if battery is incorrectly replaced.
Replace only with the same or equivalent type recommended by the manufacture.
Dispose of used batteries according to the manufacture's instruction.

1-2 Servicing Precaution

WARNING 1: First read the Safety Precaution section of this manual. If some unforeseen circumstance creates a conflict between the servicing and safety precautions, always follow the safety precaution.

WARNING 2: An electrolytic capacitor installed with the wrong polarity might explode.

1. Always unplug the unit's AC power cord from the AC power source or the Power Switch off before attempting to:
 - (a) Remove or reinstall any component or assembly,
 - (b) Disconnect an electrical plug or connector,
 - (c) Connect a test component in parallel with an electrolytic capacitor.
2. Some components are raised above the printed circuit board for safety. An insulation tube or tape is sometime used. The internal wiring is sometimes clamped to prevent contact with thermally hot components. Reinstall all such elements to their original position.
3. After servicing, always check that the screws, components and wiring have been correctly reinstalled. Make sure that the portion around the serviced part has not been damaged.
4. Check the insulation between the blades of the AC plug and accessible conductive parts (example: metal panels and input terminals).
5. Insulation Checking Procedure: Disconnect the power cord from the AC source and turn the power switch ON. Connect an insulation resistance meter (500V) to the blades of the AC plug. The insulation resistance between each blade of the AC plug and accessible conductive parts (see above) should be greater than 1 mega-ohm.
6. Never defeat any of the B+ voltage interlock. Do not apply AC power to the unit (or any of its assemblies) unless all solid-state heat sinks are correctly installed.
7. Always connect an instrument's ground lead to the instrument chassis ground before connecting the positive lead; always remove the instrument's ground lead last.

1-3 Precaution for Electrostatically Sensitive Devices (ESDs)

1. Some semiconductor (solid state) devices are easily damaged by static electricity. Such components are called Electrostatically Sensitive Devices (ESDs); examples include integrated circuits and some field-effect transistors. The following techniques will reduce the occurrence of component damaged caused by static electricity.
2. Immediately before handling any semiconductor components or assemblies, drain the electrostatic charge from your body by touching a known earth ground. Alternatively, wear a discharging wrist-strap device. (Be sure to remove it prior to applying power-this is an Electric shock precaution.)
3. After removing an ESD-equipped assembly, place it on a conductive surface such as aluminum foil to prevent accumulation of electrostatic charge.
4. Do not use Freon-propelled chemical. These can generate electrical charges that damage ESDs.
5. Use only a grounded-tip soldering iron when soldering or unsoldering ESDs.
6. Use only an anti-static solder removal device. Many solder removal devices are not rated as anti-static; these can accumulate sufficient electrical charge to damage ESDs.
7. Do not remove a replacement ESD from its protective package until you are ready to install it. Most replacement ESDs are packaged with leads that are electrically shorted together by conductive foam, aluminum foil or other conductive materials.
8. Immediately before removing the protective material from the leads of a replacement ESD, touch the protective material to the device will be installed.
9. Minimize body motions when handling unpacked replacement ESDs. Motions such as brushing clothes together, or lifting a foot from a carpeted floor can generate enough static electricity to damage an ESD.

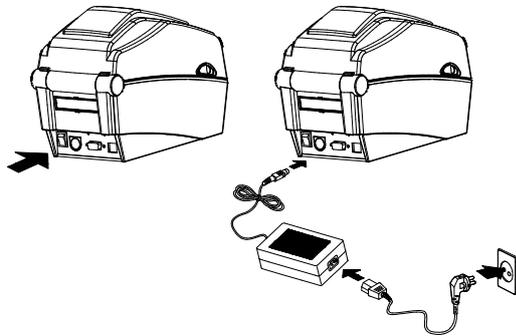
1-4 Operational Precautions

1. The heating element of the printer mechanism's thermal head and the driver IC are easily damaged. Never allow these components to come into contact with metal or other hard objects.
2. Never touch the printer mechanism's heating element with your hand. Doing so can damage the heating element and affect proper operation.
3. The head and motor areas are very hot during and immediately after printing. Do not touch components in these areas directly with your hand.
4. Do not use any paper other than these specified in this manual otherwise print head warranty and print quality are affected adversely.
5. Thermal paper starts to color at around 70°C. Take care to protect unused and printed thermal paper against the effects of heat, light and characters on the paper to feed.
6. Take the roll paper out of the printer when you will not use the printer for a long time in a high temperature and humidity environment.

2. Operating Instruction and Installation

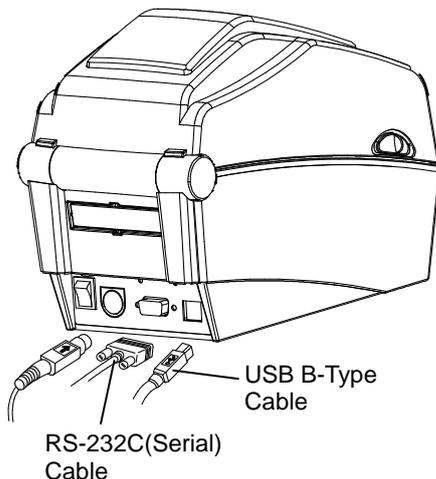
2-1 Installation

2-1-1 SMPS Installation



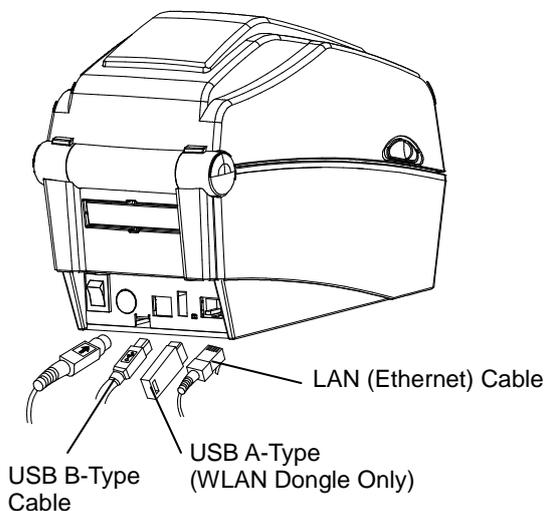
- 1) Turn off the printer power switch.
- 2) Check to see that the AC adapter voltage matches that of the power source.
- 3) Connect the AC adapter jack to the printer power connector.
- 4) Connect the power cord to the AC adapter.
- 5) Connect the power cord to a power source/outlet.

2-1-2 Interface Cable Installation (STD Model)



- 1) Turn off the power switch.
- 2) Connect the communication cable to the printer communication port to be used.
 - Connect the RS-232C (Serial) Cable to the SERIAL port. and tighten the screw on both sides. This port requires a shielded cable less than 1.8m long.
 - Connect USB B-Type cable to the USB port. This port requires a shielded cable less than 1.8m long.

2-1-3 Interface Cable Installation (Ethernet Model)

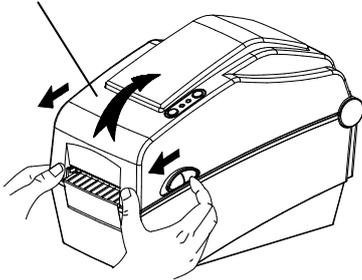


- 1) Turn off the power switch.
- 2) Connect the communication cable to the printer communication port to be used.
 - Connect the LAN (Ethernet) Cable to the ETHERNET port. This port requires a cable less than 3.0m long.
 - Connect USB A-Type (WLAN Dongle only) to the HOST port.
 - Connect USB B-Type Cable to the USB port. This port requires a shielded cable less than 1.8m long.

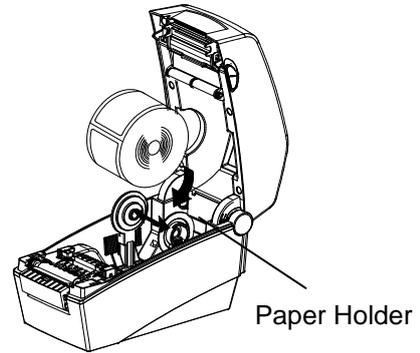
2-1-4 Paper Roll Installation

1) Open the Paper Cover.

Paper Cover



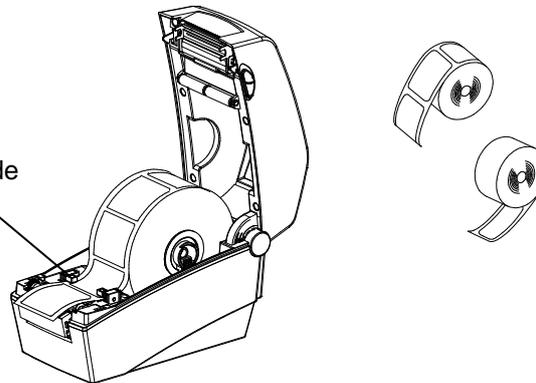
2) Spread the Paper Holder and insert paper roll.



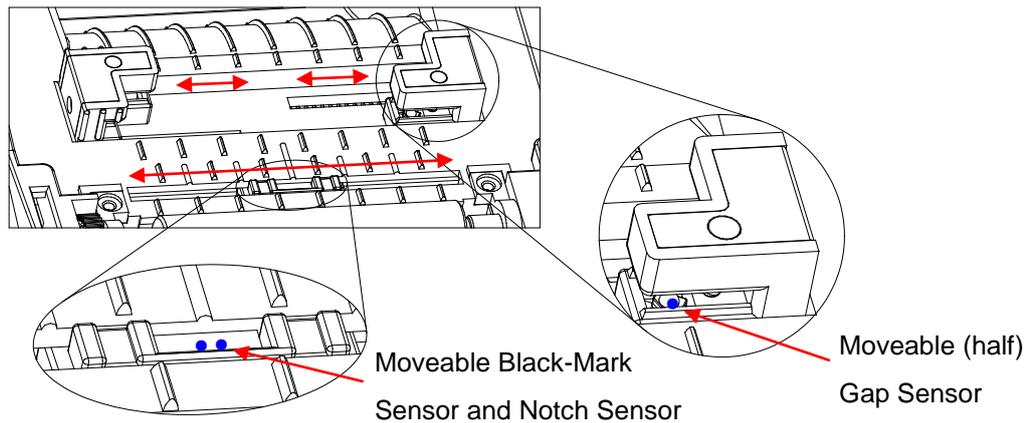
3) Adjust the paper guide to the width of the paper.

* Whether the paper label is wound inwards or outwards, its printing surface must face up.

Paper Guide



4) After Installation the paper, manually set the sensor (Gap & Black-Mark) and Paper Guide to the correct position.

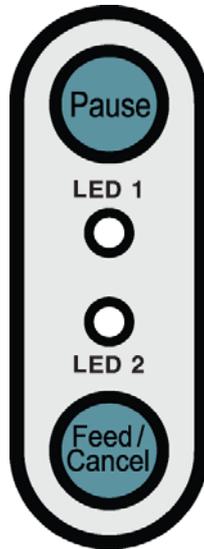


5) Close the Paper Cover until a click sound is heard.

2-2 Operations

2-2-1 Using the operation panel

Most of the functions of this printer are governed by software, but you can monitor the printer's status by looking at the lights on the control panel and for some procedures you will use the buttons.



2-2-2 Button Operations

Printer state before operation	Button		Operation procedure	Printer operation mode
	Feed/Cancel	Pause		
Power OFF	Press	-	<ul style="list-style-type: none">• Apply power while pressing the button. (Hold the button until the printer starts self-test printing)	Self-test Printing Mode.
Print Standby	Press	-	<ul style="list-style-type: none">• Press the button softly and release it immediately	Feed Mode
Print Standby	-	Press	<ul style="list-style-type: none">• Press the button for two seconds and continue to hold	Stand-alone configuration Mode
During printing	Press	-	<ul style="list-style-type: none">• Press the button for two seconds and continue to hold	Print Cancel Mode
During printing	-	Press	<ul style="list-style-type: none">• Press the button softly and release it immediately	Print Pause Mode

2-2-3 LED indicator for various printer statuses

LED 1		LED 2		Printer Status	
Color	Status	Color	Status		
Green	On	Green	On	Print standby mode	Print standby mode
Red	On	Orange	On	Error mode	Paper jam (gap / black mark is not recognized)
Red	On	Green	Blink	Error mode	Printer head overheating
Red	On	Red	Blink	Error mode	Cover open
Red	On	Orange	Blink	Error mode	No paper
Red	On	-	Off	Error mode	Media calibration failure
Red	Blink	Red	Blink	Error mode	Auto-Cutter error
Orange	On	Orange	On	Mode switching notification	Mode switching notification
Green	Blink	Red	On	Wait for input	Print is paused temporarily. Wait for button input
Green	Blink	Green	Blink	Wait for input	Cover Close Mode. Wait for button input
Green	On	Red	Blink	Wait for input	Print Cancel Mode. Wait for button input

2-2-4 Test printing

1. Printing using Windows driver

Windows Driver installation files and manuals are provided on the BIXOLON official website.
(<http://www.bixolon.com>)

Please refer to the manual to install the Windows Driver and print a test page.

2. Printing using label design program

Label Design Program installation files and manuals are provided on the BIXOLON official website.
(<http://www.bixolon.com>)

Please refer to the manual to install the Label Design Program and print a test page.

2-2-5 Self-Test

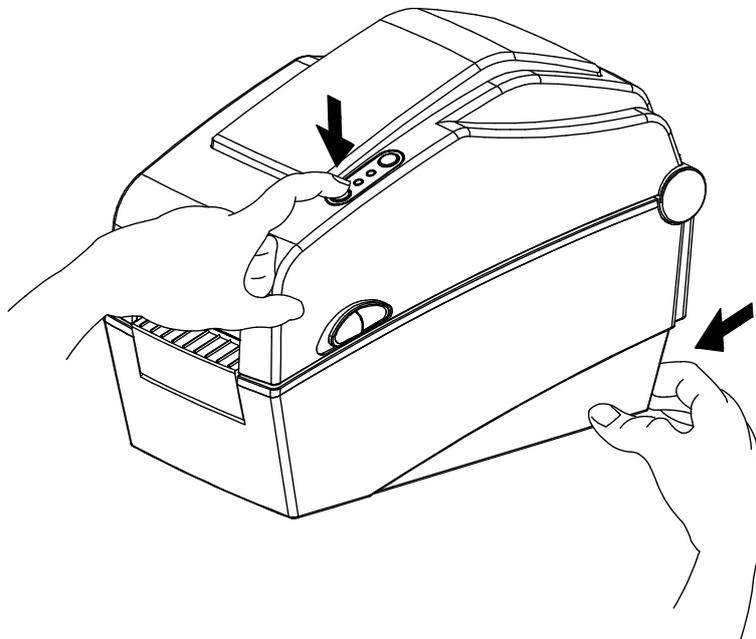
The self-test checks whether the printer has any problems.

- Firmware version, printer configuration information, printing quality checking pattern, and peripheral configuration information, etc.

Users cannot perform this procedure if using the printer's label peel-off option.
If the printer does not function properly, contact an authorized dealer.

The self-test checks the following;

- 1) Make sure that the paper roll has been installed properly.
- 2) Turn on the power while pressing the feed button then self-test will begin.
(Hold the button until the printer starts self-test printing)

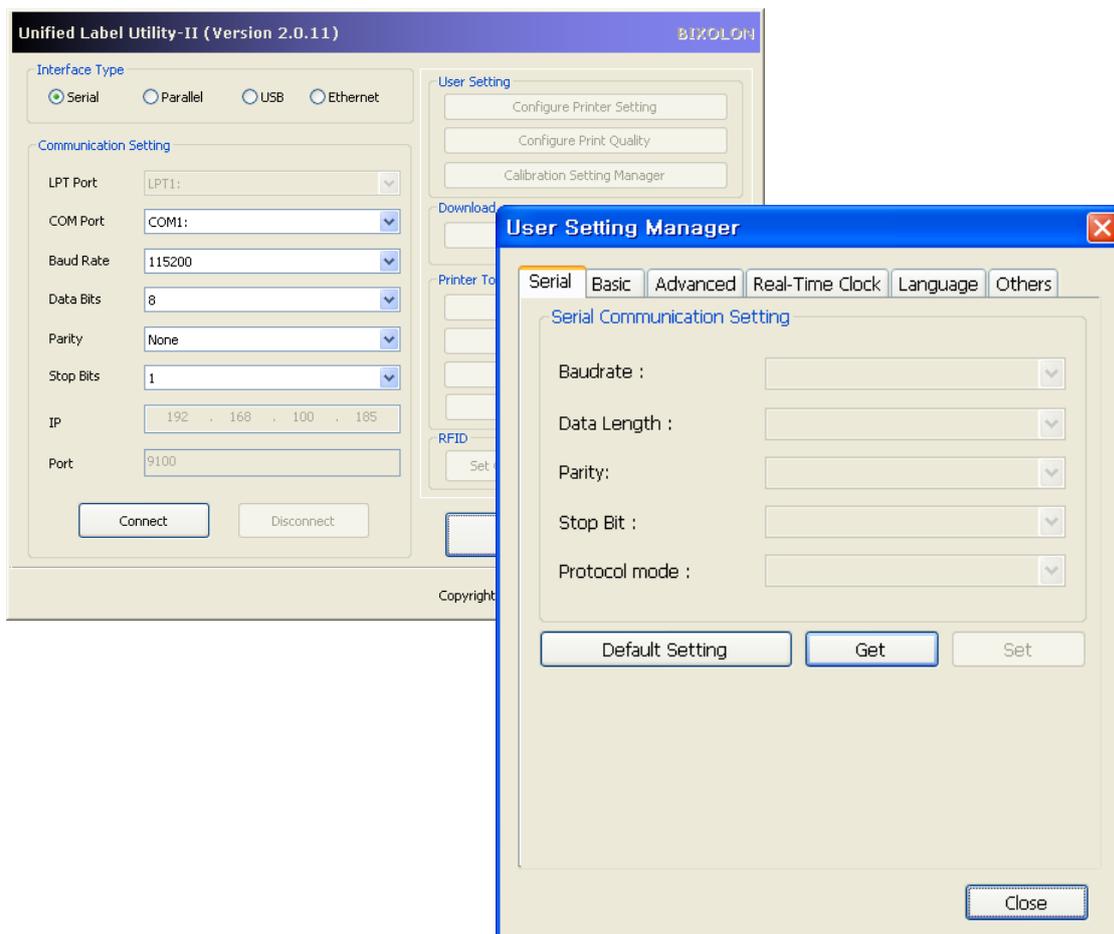


2-2-6 Printer setting using utility program

Various printer settings can be changed using the utility program (Unified Label Utility-II). Functions that can be used with the utility program are as follows.

- 1) Serial communication settings
Handshake, Stop bit, Data bit, Parity, and Baud rate can be configured.
- 2) Basic printer settings
Paper size, printing speed and density and paper type can be configured.
- 3) Language setting
Code page can be configured.
- 4) Media sensor manual calibration function
This function can be used to detect special type or special material paper that is not detected through automatic calibration function. Refer to Manual Calibration mode page for more details
- 5) Other functions for printer test are also provided.

Unified Label Utility-II installation files and manuals are provided on the BIXOLON official website. (<http://www.bixolon.com>) Please refer to Unified Label Utility-II manual for details.



2-2-7 Stand-alone Configuration Mode

Various modes can be executed using buttons and LED only.

1. How to start stand-alone configuration mode

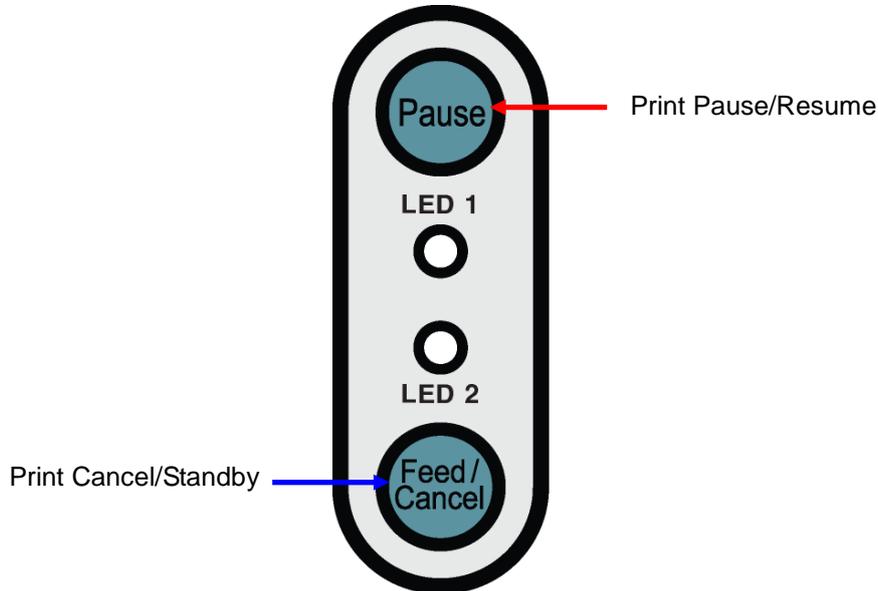
- 1) The printer mode is set to Printer Setting Mode when the Pause button is pressed for two seconds while in Print Standby Mode.
- 2) Both LEDs will change to orange color and the printer will be set to Stand-alone Configuration Mode.
- 3) When the printer enters into this mode, the status of LED 1 and LED 2 are changed sequentially.
- 4) When the Feed button is pressed at specific LED color combination, the corresponding printer operation will be selected.

2. List of supported functions

Sequence number	LED 1		LED 2		Printer operation
	Color	Status	Color	Status	
1	Green	On	Green	Blink four times	Print Configuration Info.
2			Orange	Blink four times	Print File List
3			Red	Blink four times	Factory Reset
4	Orange	On	Green	Blink four times	Gap Sensor Auto Calibration
5			Orange	Blink four times	B/M Sensor Auto Calibration
6			Red	Blink four times	Data Dump Mode
7	Red	On	Green	Blink four times	Demo Mode
8			Orange	Blink four times	Change to Line Mode
9			Red	Blink four times	Download Items Delete

2-2-8 Pause/Cancel

During multiple-page print jobs, the Pause and Cancel button can be used to temporarily cease printing and cancel the print job altogether, respectively.



1. Pause/Resume Function

- 1) When printing labels, pressing the Pause button
- 2) The printer will pause after finishing the current label printing and the status of LED will be as follows.
 - LED 1: Green Blink
 - LED 2: Red On
- 3) While the print job is paused, press the Pause button again to resume printing.

2. Print Cancellation

- 1) During label printing and/or pause mode, pressing the Cancel button enters the print cancellation mode.
- 2) The following processes occur in the print cancellation mode.
 - All label printing cancelled
 - All data received in the printer communications buffer deleted.
 - All received data deleted.
- 3) The LED Status in the print cancellation mode can be as follows.
 - LED 1: Green On
 - LED 2: Red Blink
- 4) While in the print cancellation mode, press the Cancel button again to return to print standby mode.

2-2-9 Media Calibration

This printer has been designed to recognize the gaps with most print papers, but sometimes it may not recognize the gap and keep feeding paper if a special type of paper is used. In this case, run Auto Calibration function so that the printer can recognize the gap. BIXOLON printer provides various media calibration methods in order to accommodate various special paper types.

1. About media calibration

- 1) This function is for adjusting the sensitivity of the paper detection sensor for accurate printing position control and measuring actual length of paper.
- 2) Sensor sensitivity adjustment
 - The purpose is to detect the identifier (gap/black mark/groove) of installed label
- 3) Paper length measurement
 - Accurate length is required to rotate the printing orientation.
 - The purpose is to detect the change of paper type.

2. When is media calibration required?

- 1) When the printer is installed first time
- 2) When the newly installed paper is a different paper type
- 3) When printer position is not accurate or printer does not stop in the right position

3. How to perform media calibration

- 1) The following four methods of media calibration can be used depending on the conditions.
 - Smart Media Detection
 - Gap Sensor Auto Calibration Mode
 - Black Mark Sensor Auto Calibration Mode
 - Manual Calibration Mode
- 2) Why are several calibration methods provided?
 - Multiple labels should be scanned for media calibration and more accurate sensitivity calibration can be performed when more labels are scanned.
 - The number of labels to scan for sensor sensitivity adjustment depends on various conditions such as label paper material, color, surface status, thickness, gap length, pre-printed pattern, etc.
 - Four different media calibration modes are provided for compromise between prevention of excessive use of paper and accuracy of sensor sensitivity adjustment.
 - Smart media detection mode that allows for adjustment of sensitivity with minimum amount of scanning should be good enough for most cases with general labels.
 - Try various methods in order of Smart Media Detection → Gap Sensor Automatic Calibration / Black Mark Sensor Automatic Calibration → Manual Calibration Mode

2-2-10 Smart Media Detection

1. Printer executes this function when necessary without user input and media configuration can be completed with Smart Media Detection function for most print papers.
2. Papers with gap or black mark can be identified without separate settings.
3. 3 ~ 5 pages of labels will be used depending on the type of paper.
4. Smart Media Detection function is executed in the followings cases
 - When the printer is installed first time, it is executed through Feed button or print command.
 - When paper length change is detected during feeding or printing.
 - When the paper type entered by command is different from the configured paper type.
 - After reset with factory settings
5. Smart Media Detection function will be turned off after setting the sensor sensitivity using Automatic Calibration Mode or Manual Media Calibration mode, and it will be enabled again after resetting the printer with factory settings.

2-2-11 Gap Sensor Auto Calibration Mode

Use this mode when paper is not detected correctly with Smart Media Detection function.

Printer feeds paper and calibrates Gap Sensor automatically.

The printer will enter error mode if paper detection fails after feeding up to 1 meter of paper. Error mode can be released by opening and closing the cover.

Use Manual Calibration Mode if paper detection fails in this mode.

Smart Media Detection will be disabled if paper detection is successful in this mode.

1. Procedure to run the calibration

- Press the Feed button at 4th LED sequence as shown in section 2-2-7 (LED 1 is Orange and LED 2 is blinking Green four times) to start Gap Sensor Automatic Calibration Mode.

2-2-12 Black Mark Sensor Auto Calibration Mode

Use this mode when paper is not detected correctly with Smart Media Detection function.

Printer feeds paper and calibrates Black Mark Sensor automatically.

The printer will enter error mode if paper detection fails after feeding up to 1 meter of paper. Error mode can be released by opening and closing the cover.

Use Manual Calibration Mode if paper detection fails in this mode.

Smart Media Detection will be disabled if paper detection is successful in this mode.

1. Procedure to run calibration

- Press the Feed button at 5th LED sequence as shown in section 2-2-7 (LED 1 is Orange and LED 2 is blinking Orange four times) to start Black Mark Sensor Automatic Calibration Mode.

2-2-13 Manual Calibration Mode

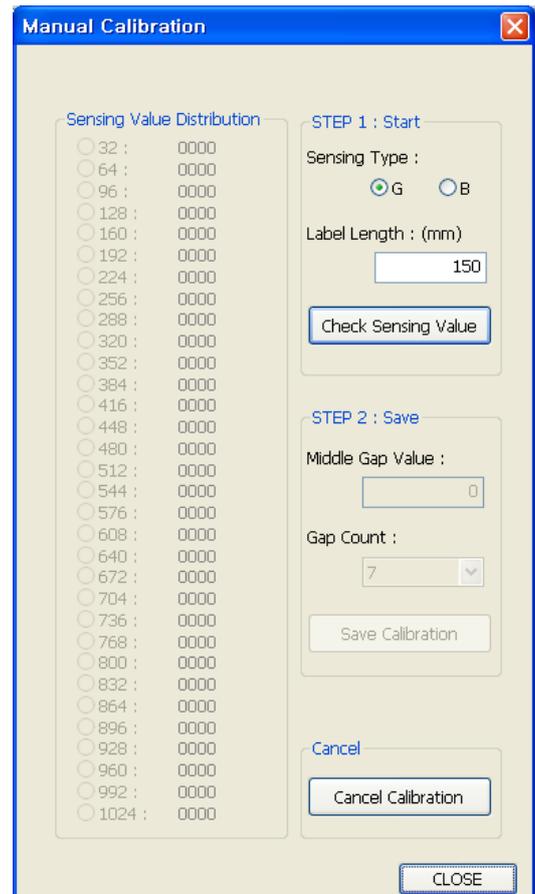
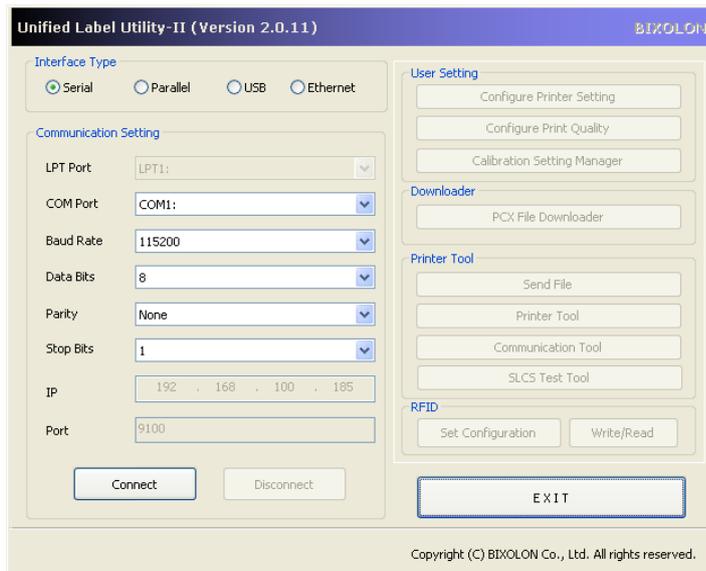
Manual-calibration of media detection can be used when the printer cannot detect a media gap (or black mark) even after auto-calibration has been executed.

Users can calibrate sensor parameters in detail by using the utility program provided by the manufacturer.

The installation files and manuals are provided on the BIXOLON official website. (<http://www.bixolon.com>)

Please make sure the printer is connected and execute the utility program.

Click on the Calibration Setting Manager Button after setting the interface type.



- 1) Select the sensing type and input the label length by millimeter and click on "Check Sensing Value" button. Then printer starts to calibrate.
- 2) Printer will print the scanned values after calibration and the values will appear on the Screen.
- 3) Optimal sensing values will appear in bold letters on the left of the utility screen. Select one of the optimal sensing value by clicking on its option button and then click on "Save Calibration".
- 4) If chosen value does not work properly, please try the other values among the bold letters.
- 5) To go back to the initial value, please click on "Cancel Calibration"

2-2-14 Cover Closing Mode

1. About Cover Closing Mode

- 1) The printed area may become out of range of paper if the paper is not in the accurate printing position when the cover is opened and closed.
- 2) The printer is put into Cover Closing Mode instead of Print Standby Mode when the cover is closed in order to prevent this problem, and it waits for user input.
- 3) The statuses of LEDs are as follows in this mode.
 - LED 1: Green Blink
 - LED 2: Green Blink
- 4) The data received during Cover Close Mode is not printed until the printer recovers to Print Standby Mode.

2. How to switch the printer from Cover Close Mode to Print Standby Mode

- 1) Press the Pause button to switch to Print Standby Mode without feeding any paper.
- 2) Press the Feed button to feed one page to align the paper position and switch to the Print Standby Mode.

2-2-15 Data Dump Mode

This function can be used to diagnose the communication issues when the printing does not work correctly. In this mode, the received data are not analyzed instead they are dumped in hex format without processing. Turn the printer off and on to recover to the Print Standby Mode.

1. How to start Data Dump Mode

- 1) Press the Pause button for two seconds during Print Standby Mode.
- 2) Both LEDs will change to orange color and the printer will be set to Stand-alone Configuration Mode.
- 3) Press the Feed button at the 6th LED sequence in 2-2-7 (LED 1 is Orange / LED 2 is blinking Red four times) to enable Data Dump Mode.

2-2-16 Factory Reset

This function is used to reset the printer settings to factory default settings.

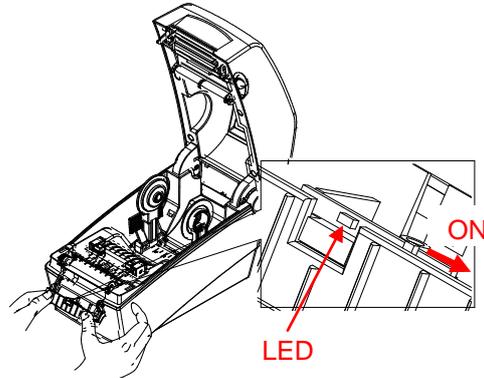
1. How to reset the printer

- 1) Press the Pause button for two seconds during Print Standby Mode.
- 2) Both LEDs will change to orange color and the printer will be set to Stand-alone Configuration Mode.
- 3) Press the Feed button at the 3rd LED sequence as shown in section 2-2-7 (LED1 is Green / LED 2 is blinking Red four times) to reset the printer to factory settings, and Smart Media Detection function will be executed.

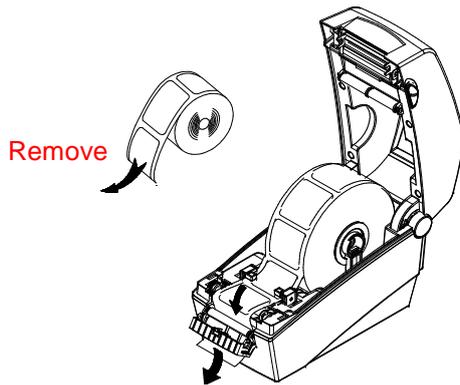
2-2-17 Peel-Off (Option)

As a function that is used to peel-off labels, it is used only with label paper.

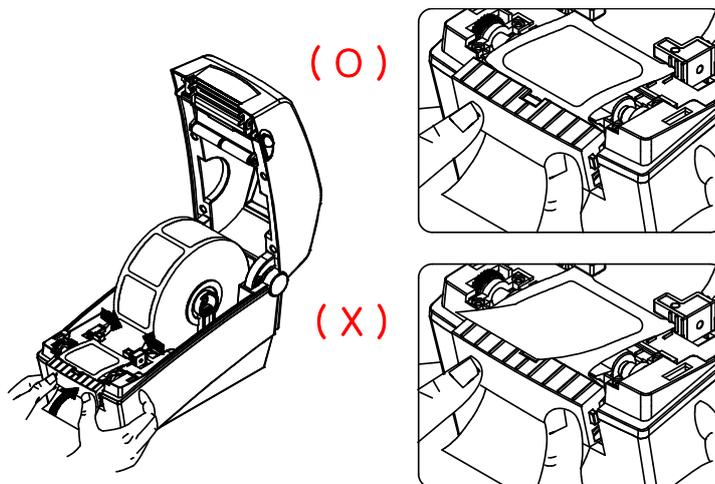
- 1) Open the paper cover.
- 2) Open the label peel-off cover and set the peeler switch to the ON position.
- Check to see that the LED has turned on.



- 3) Remove one sheet of the label paper, and insert the paper as shown in the image below.



- 4) Adjust the paper guides and close the label peel-off cover.



- 5) Close the Paper Cover until a click sound is heard.
- 6) Turn the printer off and on.

2-2-18 Using Fan-Fold Paper

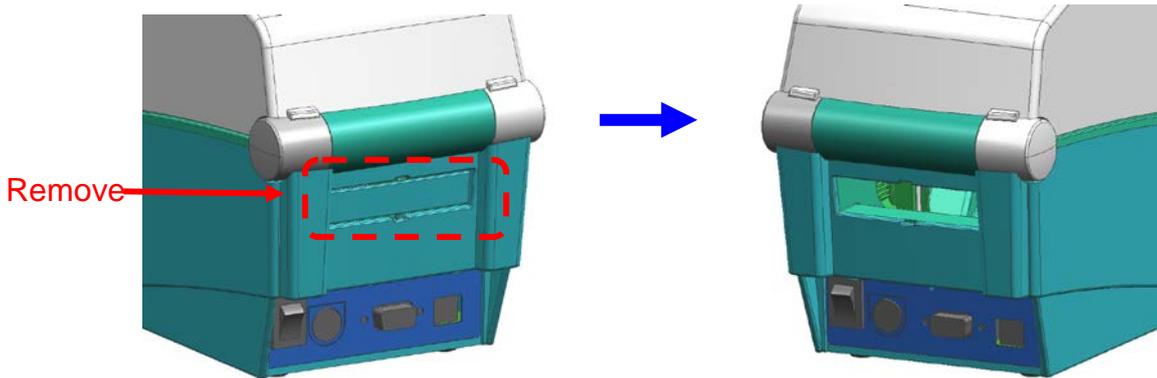
Supplying paper to the printer externally is done as follows.

1. Printer Preparation

Remove the rear paper supply cover on the back side of the printer with a knife or other cutting instrument.

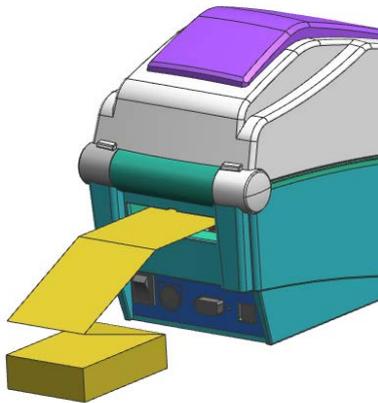
※ CAUTION

- Take care not to injure the hands and/or any other part of the body when performing this step.

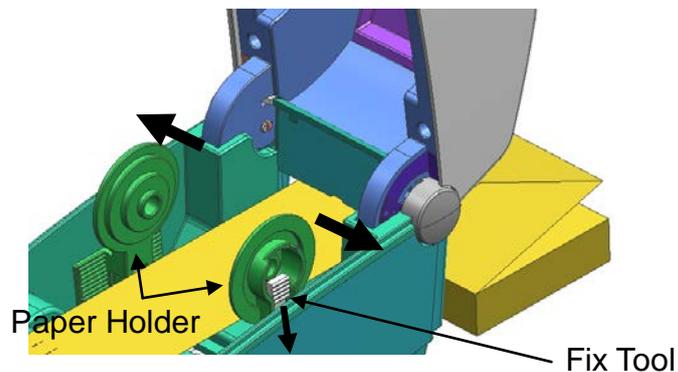


2. When Using Fan-Fold Paper

1) Insert the paper at the rear of the printer using the slot and guides.



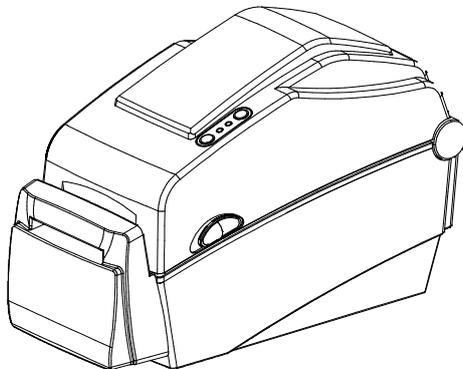
2) Adjust Paper Holders to the paper width by using the Fix Tool.



2-2-19 Auto Cutter (Option)

For auto paper cutting, products equipped with auto cutter are available. Auto-Cutter can be controlled by command. And default setting can be changed by Unified Label Utility-II.

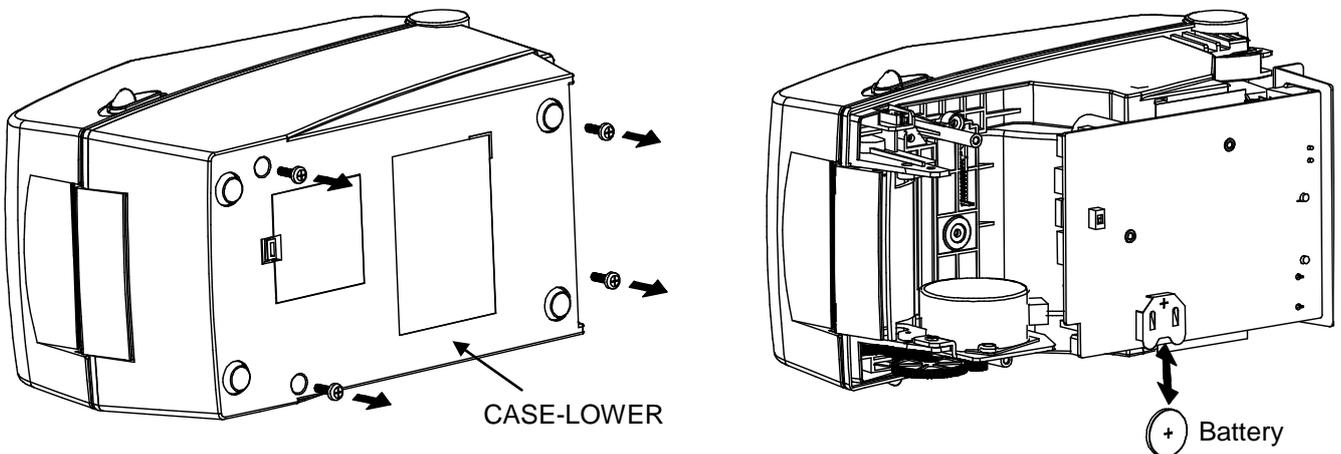
※ The paper installation method is the same as paper with no auto cutter.



2-2-20 Real-Time Clock (Option)

The function of the Real-Time Clock option is to print the time and date onto the label. The date and time can be set in the printer by using the Unified Label Utility-II.

You can discern a low or depleted battery if printer provides a consistently incorrect time and date. In this case, you need to replace the battery. When battery is changed, the time and the date will need to be reset.



※ CAUTION

- For your safety, the access cover on the bottom of the printer should always be closed. When changing the battery, please open the cover with your thumb and index finger. Then close the cover after changing the battery.
- Wrap the battery when recycling or storing to avoid short circuit.
- Do not short circuit the battery. It may result in heat generation or fire.
- Do not disassemble or heat the battery.

3. Product Specifications

3-1 Appearance

3-1-1 Printer Dimensions(mm)

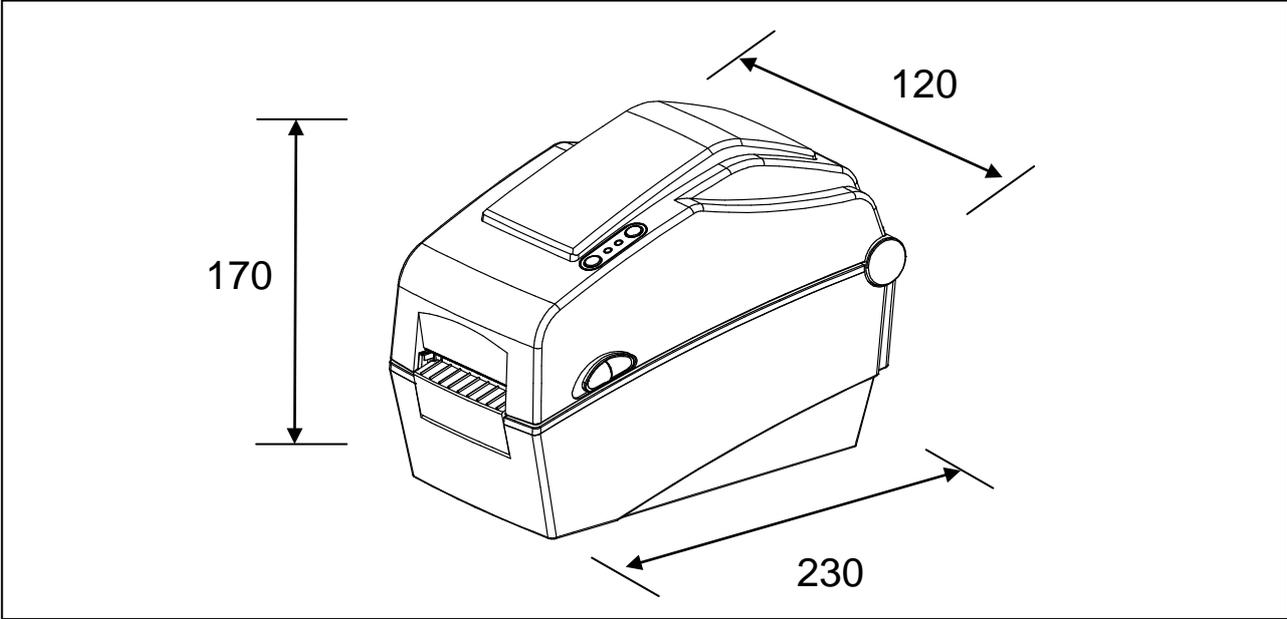


Figure3-1 Printer Dimension

3-1-2 AC/DC Adapter Dimension(mm)

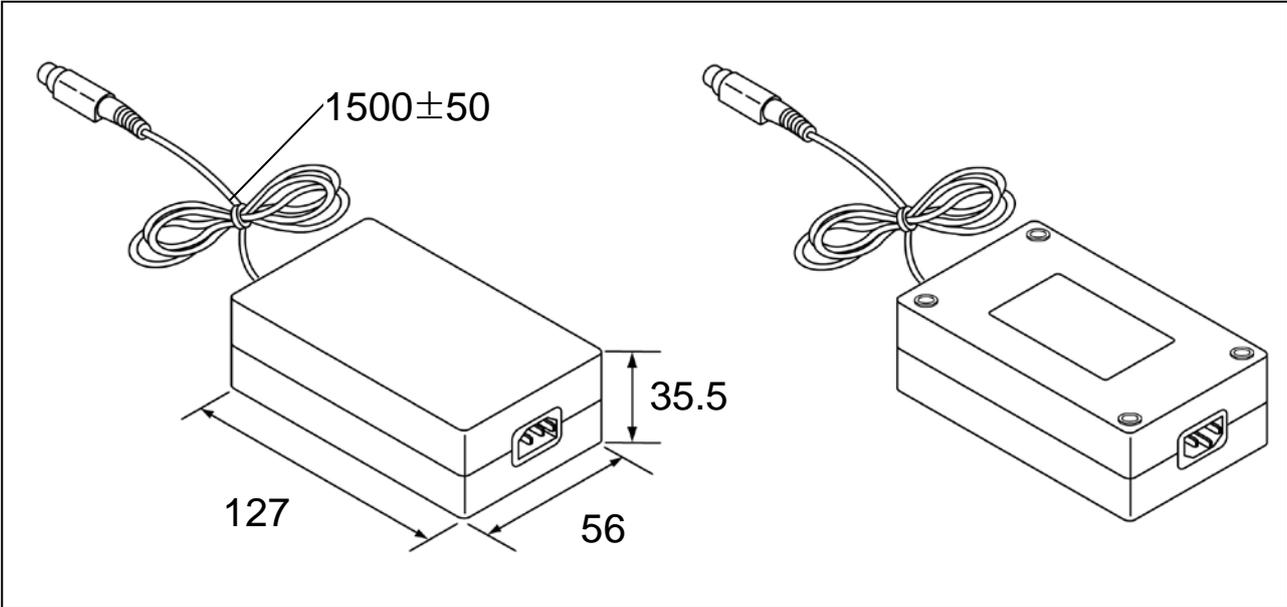
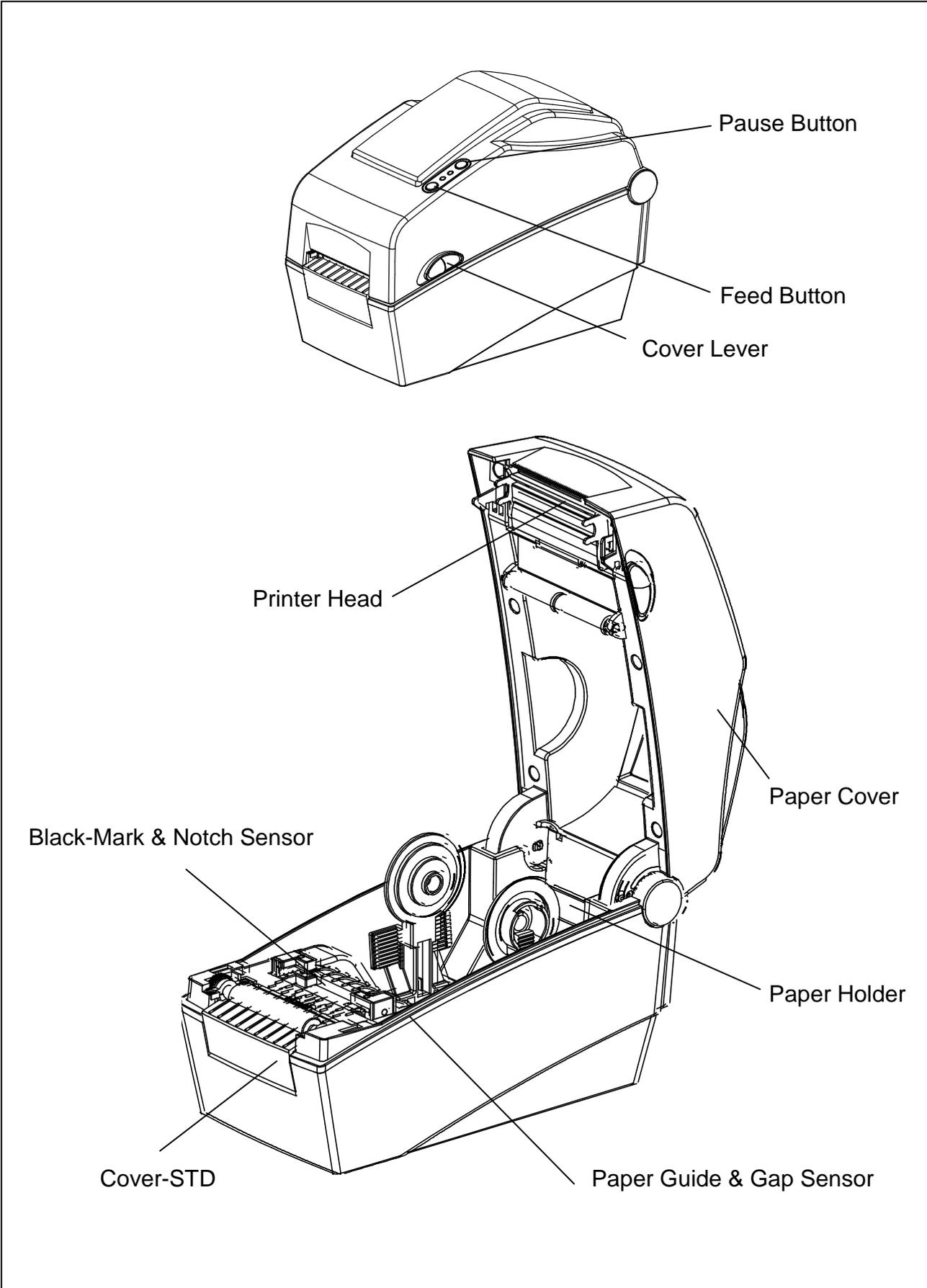


Figure3-2 AC/DC Adapter Dimension

3-1-3 Feature Locations



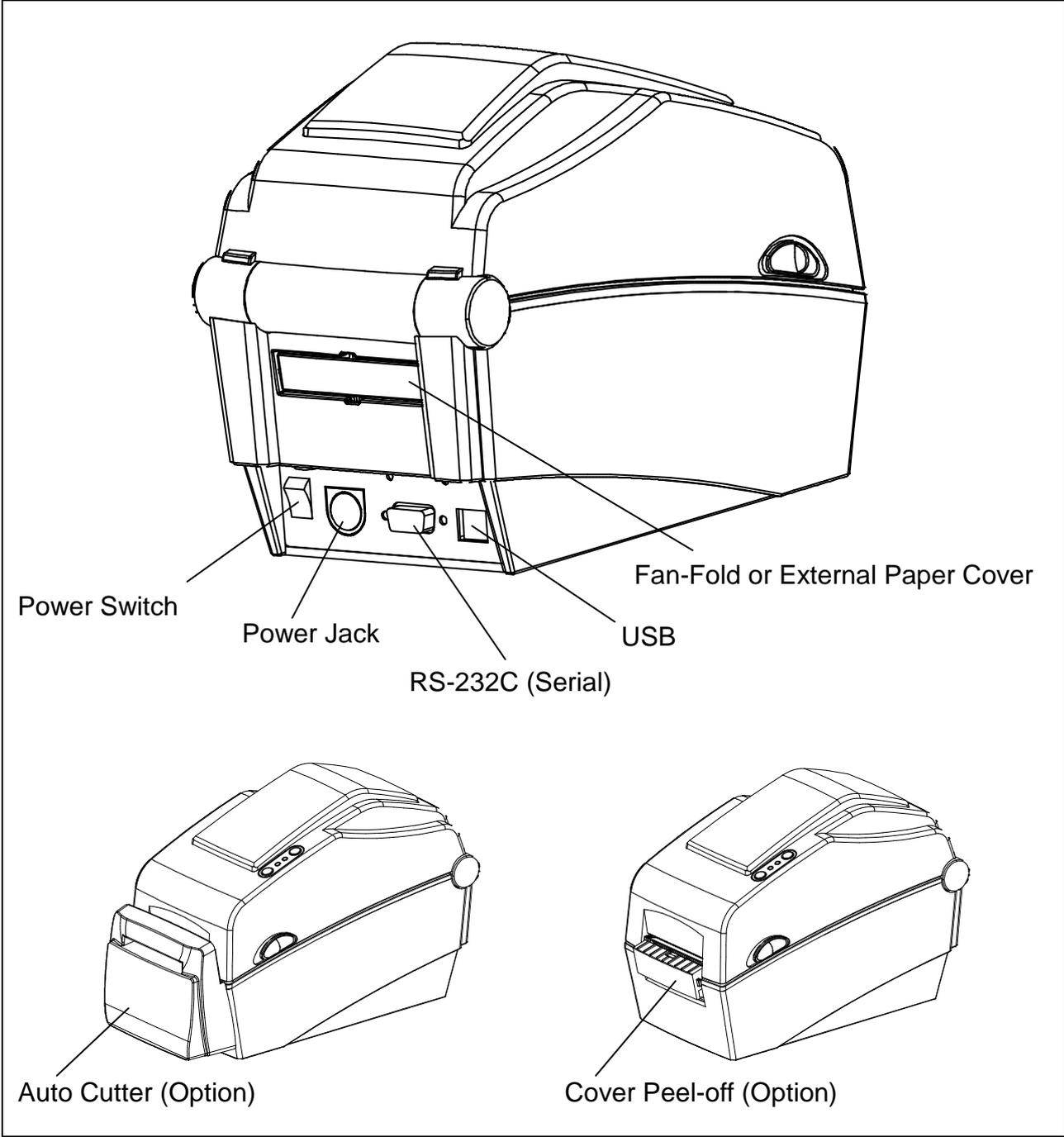


Figure3-3 Feature Location

3-2 General Specifications**3-2-1 Hardware Specifications**

Item	Description	Remark
Product	SLP-DX220 / SLP-DX223 Label Printer	
Processor	ATMEL AT91SAM9G45 (32bit)	
Memory	SRAM : 64MB DDR2 SDRAM (W9751G6KB-25) Flash ROM : 128MB Nand Flash (F59L1G81A-25T)	
Serial Interface (RS-232C)	Flow Control 1) Xon / Xoff (S/W Control) 2) RTS / CTS (H/W Control) Baud Rate : 9,600 / 19,200 / 38,400 / 57,600 / 115,200bps Connector Type : DB9P (Female)	
USB Device	Version : V2.0 Transfer Type : BULK Speed : Hi-Speed, 480Mbps Power : Self-powered Connector Type : USB B type	
USB HOST (WLAN)	Version : V2.0 Transfer Type : BULK Speed : Hi-Speed, 480Mbps Power : Self-powered (Current Limiting : 0.5A) Connector Type : USB A type	Factory Option (USB Dongle)
Ethernet Interface	Network : 10 / 100 Base-T, Auto Detection Protocol : TCP, UDP, IP, ICMP, ARP Flow Control : Hardware (RTS / CTS)	Factory Option
Auto Cutter	Cut Mode : Full Cut (Min. 0.3 Million Cut_Max. 0.18mm)	User or Factory Option
Printing Method	Direct Thermal Printing	
Printing Speed	SLP-DX220 : Max. 152mm/sec (Max. 6ips) SLP-DX223 : Max. 100mm/sec (Max. 4ips)	
Power Consumption	Operation: Max. 88W (100% duty) Operation: Max. 43W ("H" Pattern) Idle(Ready mode): Typ. 1.09W	
AC/DC Adapter	Input : AC100 ~ 240V, 50 / 60Hz, 1.5A Output : DC24V, 2.5A Efficiency Level : V	Peak Load : 13A
Environment Condition	Operating Temperature : 0°C ~ 40°C Storage Temperature : -20°C ~ 60°C Operating Humidity : 10% ~ 80% RH (no Condensation) Storage Humidity : 10% ~ 90% RH (no Condensation)	
Weight	Approx. 1.35kg (without Packing)	
Dimensions(mm)	120(W) × 230(D) × 170(H)	

3-2-2 Function Specifications

Function	Description	Remarks
Text Printing	Multiply, Bold, Reverse and Rotation functions	
1D Barcode Printing	Various barcodes supported Rotation, HRI supported.	
2D Barcode Printing	Various barcodes supported Rotation. HRI supported	
Block Printing	Line, Box, Slope and Circle printing supported Overwrite, Exclusive OR, Delete mode supported	
Graphic	PCX. BMP Save, Load & Printing, Delete function supported	
Font download	Bitmap Font Download Vector Font Download	
Template	The label format can be stored in the printer and can be reused. Variable and Counter can be used in template.	
Variable	Total 100 variables supported Can be used in Data field of Text & Barcode. Left, center and right justification	
Counter	Total 10 counters supported Maximum 27 field size. + Counting or – counting. Can be used in Data field of Text & Barcode. Left, center and right justification	
Double Buffering	Make next image buffer while printing present image buffer	
Multi Printing	Copies and Set function supported.	
Label size setting	Label size can be set by user regardless of label media size.	

3-3 Thermal Printer Specification**3-3-1 Printer Specification**

Item	Description	Remark
Model	SLP-DX220 (TPH : KRC-54-8TAO1 , Kyocera) SLP-DX223 (TPH : KRC-57-12TAO1 , Kyocera)	
Printing Method	Direct Thermal Printing	
Resolution	SLP-DX220 : 203dpi (8dots/mm) SLP-DX223 : 300dpi (11.8dots/mm)	
Printing Direction	Unidirectional with friction feed	
Printing Width	SLP-DX220 : Max. 54mm (2.12inch) SLP-DX223 : Max. 57mm (2.24inch)	432 dot 672 dot
Printing Speed	SLP-DX220 : Max. 152mm/sec (6ips) SLP-DX223 : Max. 100mm/sec (4ips)	

3-3-2 Character Specification

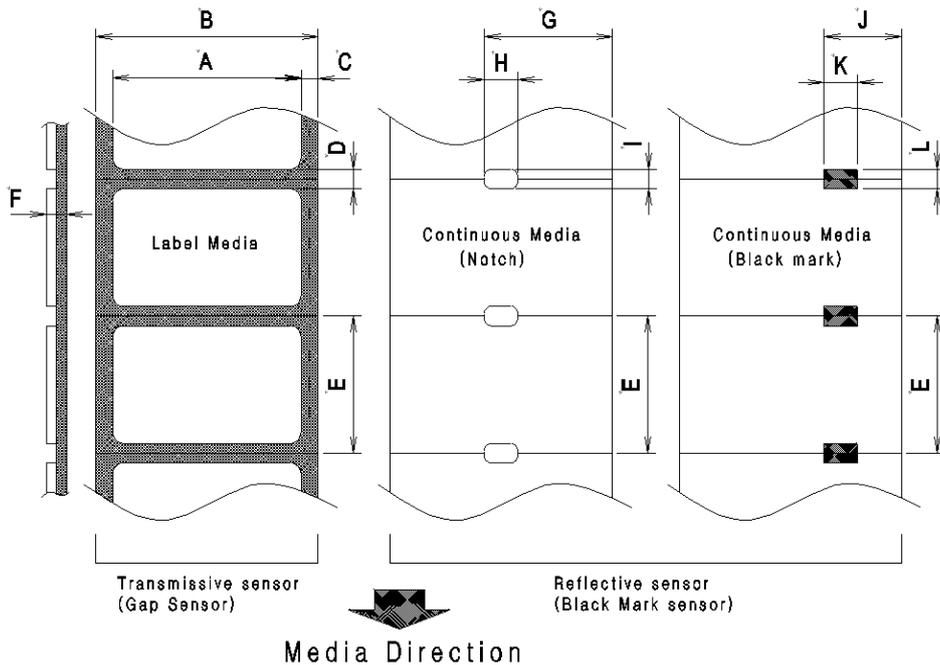
Item	Description	Remark
Number of Character	Alphanumeric Characters : 95(except space)	
	Extended Characters : more than 23 code pages	
	International Characters : more than 32 code pages	
Fonts	10 resident expandable SLCS bitmap fonts One resident scalable font for SLCS 16 resident Expandable BPL-Z bitmap fonts One resident scalable font for BPL-Z 5 resident expandable BPL-E bitmap fonts Unicode supported (UTF-8, UTF-16LE, UTF-16BE)	

3-3-3 Barcode Specification

Item	Description	Remark
1D Barcodes	Codabar Code 11 Code 128 Code 39 Code 93 EAN-13 EAN-8 Industrial 2-of-5 Interleaved 2-of-5 Logmars	MSI Plessey Postnet GS1 DataBar (RSS-14) Standard 2-of-5 UPC/EAN extensions UPC-A UPC-E IMB
2D Barcodes	Codablock Code 49 Data Matrix MaxiCode	QR Code PDF417 MicroPDF417 Aztec TLC 39

3-3-4 Paper Specification

Item	Description	Remark
Paper Kind	Top Coated Thermal Paper (Basis Weight : Max. 180g/m ² - Face stock + Liner)	
Paper Type	Roll, Fan-fold	
Paper Form	Gap, Black Mark, Notch, Continuous	
Wound Type	Outside & Inside	
Paper Roll Size	Max. Φ130mm(5.1inch),	
Core ID	Φ12.5 ~ Φ38.1mm(0.5~1.5inch),	
Materials of Core	Paper core	



Index	Item	Specification		Sensor Type
		Min.	Max.	
A	Label width	15	60	-
B	Liner width	15	60	-
C	Label right Gap	0	3	-
D	Length of Gap between labels	2.5	30	Gap sensor
E	Length	6	1000	Gap / Black mark sensor
F	Total media thickness	0.08	0.2	-
G	Notch position	15	50	Black mark sensor
H	Notch width	5	50	Black mark sensor
I	Notch length	2.5	30	Black mark sensor
J	Black mark position	15	50	Black mark sensor
K	Black mark width	5	50	Black mark sensor
L	Black mark length	2.5	30	Black mark sensor

3-3-5 Warranty and Environment Specification

Item	Description	Remark
Printer Unit	15 Months	
Head	6 Months or 25km (whichever comes first)	
Auto Cutter	Min. 0.3 Million(Paper Thickness Max. 0.18mm)	Gap or Ticket Cut only
Environmental Temperature	Operating : 0°C ~ 40°C Storage : -20°C ~ 60°C	
Humidity	Operating : 10% ~ 80%RH Storage : 10% ~ 90%RH	No Condensation

3-3-6 TPH (Thermal Printer Head) Specification

Item	Description	Remark
Head Element Structure	2 Heaters / Dot	
Number of Heat Element	203dpi : 432dots 300dpi : 672dots	
Heat Element Pitch	203dpi : 0.125mm/dot (8dots/mm) 300dpi : 0.0847mm/dot (11.8dots/mm)	
Print Width	203dpi : 54 ± 0.2mm 300dpi : 57 ±0.2mm	
Average Resistance	203dpi : 800Ω ± 3% 300dpi : 1500Ω ± 3%	
Operating Temperature	0°C ~ 70°C (Thermistor temp. Max. 65°C)	

3-3-7 Auto Cutter Specification

Item	Description	Remark
Model	ORC-RZBG63-B-F(Full Cut)	
Type	Guillotine Type	
Motor	DC Brush Motor FK-180SH-10400(MABUCHI) with D/V, Insulation Coating (Class A)	
Voltage	24Vdc +/-5%	
Current	Peak : 1.5A	

3-3-8 Media Sensor

Item	Description	Remark
Transmission Sensor	Model: KEL-333FA + KST-333FA	Gap sensor
Reflective Sensor	Model : HSDL-9100-021	Gap & Black mark sensor

3-3-9 Other Component Specification

Item	Description		Remark
Paper Feed Motor	Model : SP-42RD-100LA Voltage : 24Vdc	Type : BI-Polar Resistance : 6.3Ω	
Cover Open Sensor	Detector S/W : KFC-V-101(I) Rating : DC 16V	Contact Resistance : 50mΩ (Max) Operating Force : 61gf (Max)	
Peel Off Sensor	Reflection Type Photo Sensor	Model : HSDL-9100-021	Option

3-4 SMPS Specification

3-4-1 SMPS (Switching Mode Power Supply) Specification

Item	Description	Remark
Input Voltage	Typical : 100V/240V AC Min : 90V AC Max : 264V AC	
Input Current	1.5A Max. @90~264V voltage with max.load	
Output Voltage	+24V ± 5% Initial Tolerance with no load	
Output Current	+24V ± 5%, 0~2.5A (I _{peak} =13A)	
Inrush Current	Input fuse and bridge are less than I square (I ² t) energy criteria and no damage at cold-start	
Line Regulation	+24V ± 1% over AC input operating range	
Load Regulation	+24V ± 5% no load to rated load	
Ripple and Noise	±240mV @I _{out} =2.5A, Resistance load	
S.C.P(Short Current Protect)	Shutdown Mode The shutdown shall be cleared by removal of the short current condition and input power recycling.	
O.V.P (Over Voltage Protect)	Max : 30V	
O.T. P (Over Temperature Protect)	Shutdown Mode The shutdown shall be cleared by removal of the abnormal temp. condition and input power recycling.	
EFFICIENCY	Average 87% (Min.), per CEC method @115/230V(60/50Hz), 25 ~ 100% load	

3-4-2 SMPS Output Connector

Pin Number	Signal Name	
1	+24 VDC	
2	GND(-)	
3	N.C	
Shield	GND(-)	

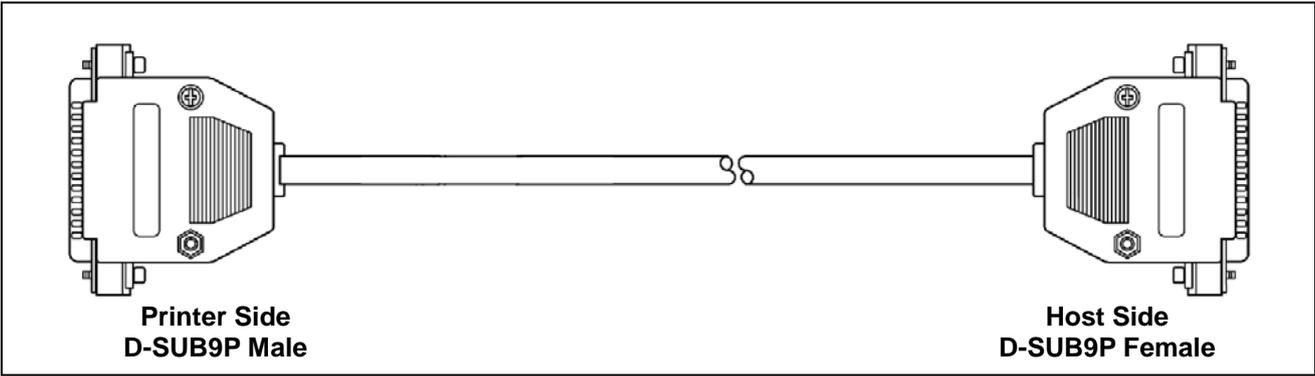
3-5 Interface Specification

3-5-1 RS-232C Serial Interface

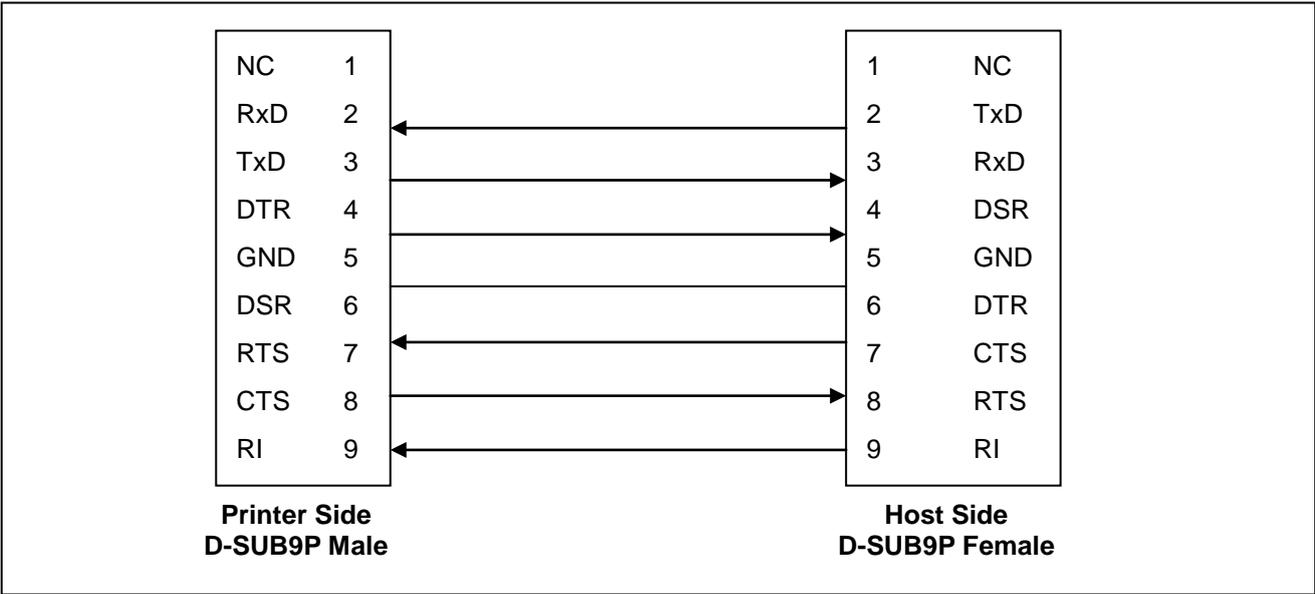
1) Specification

Item	Description	Remark
Data Transmission	Serial	
Synchronization	Asynchronous	
Hand Shaking (Flow Control)	H/W : RTS / CTS S/W : Xon / Xoff	
Signal Level	Logic 1(Mark) : -3V ~ -15V Logic 0(Space): +3V ~ +15V	
Baud Rate	9,600 / 19,200 / 38,400 / 57,600 / 115,200bps	
Data bits length	7 bits / 8 bits	
Stop bits length	1 bit / 2bits	
Parity	None / Even / Odd	
Connector	9pin – 9pin (1:1 Cable)	

2) RS-232C Cable



3) Cable Connection



4) Signal Description

Signal Name	Signal Direction	Function
Frame GND	-	Frame Ground
TxD	Output	Transmit Data
RxD	Input	Receive Data
RTS	Output	Ready To Send Ready to exchange data
CTS	Input	Clear To Send
DTR	Output	Data Terminal Ready (Almost same function as RTS)
DSR	Input	Data Set Ready (Almost same function as CTS)
Signal GND	-	Signal Ground

5) S/W Flow Control

When Xon/Xoff flow control is selected, the printer transmits Xon(ASCII 11h) or Xoff(ASCII 13h) signal through the TxD line. If the printer is busy, the printer transmits XOFF to host through the TxD line. Then the host recognizes that the printer is now busy. So the host does not transmit a data to the printer. If the printer is released from busy state, the printer transmits Xon to host through the TxD line. Then the host recognizes that the printer is not busy. And the host can transmit a data to the printer

6) H/W Flow Control

When H/W flow control is selected, the printer checks whether the host is BUSY or not before sending data. If the host is BUSY the printer does not transmit data till the host becomes NOT BUSY.

3-5-2 USB Interface

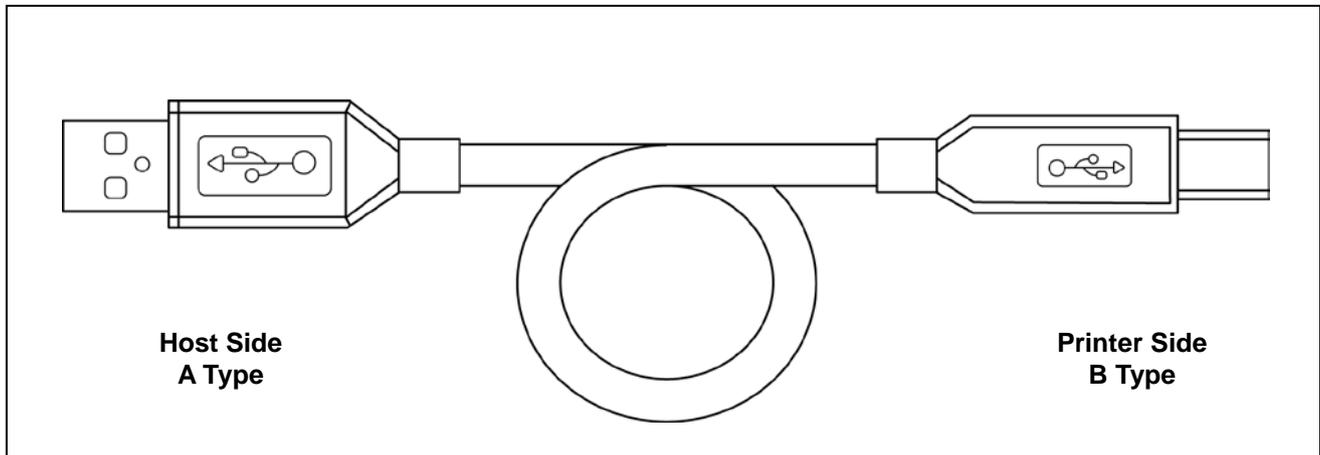
1) Specification

Item	Description	Remark
Transfer Type	BULK	
Data Signal	Bidirection, Half-Duplex Differential Signal Pair(D+ / D-)	
Data Format	NRZI Format Zero Bit Stuffing after 6 ones	
Speed	Hi-Speed, 480M bps	
Power	Self-Powered	
Cable & Connector	Cable : A to B Type Standard Connector : B Type	
Other	Supports the 480 Mbps high-speed (HS) mode for USB 2.0, as well as the 12 Mbps full-speed (FS) and the 1.5Mbps low-speed (LS) mode for USB 1.1	

2) Signal Description

Pin No	Signal Name	Assignment(Color)	Function
Shell	Shield	Drain Wire	Frame Ground
1	VBUS	Red	Host Power : DC5V / 500mA
2	D-	White	Differential Data Line
3	D+	Green	Differential Data Line
4	GND	Black	Signal Ground

3) USB I/F Cable

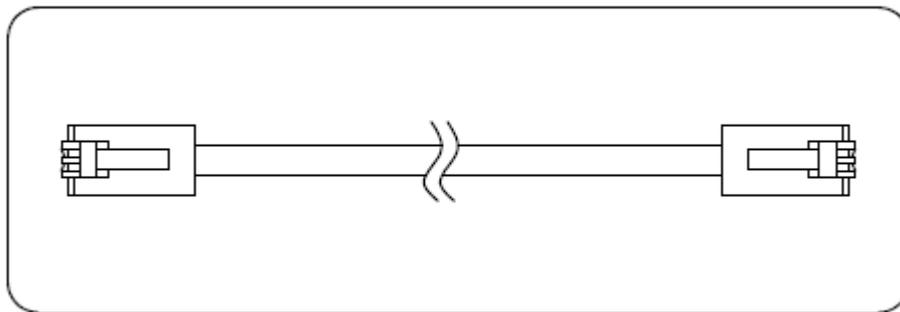


3-5-3 Ethernet I/F

1) Ethernet I/F specifications

Item	Description	Remark
Network Interface	10 / 100 Base-T All in one type (Auto detection)	
Protocol	TCP, UDP, IP, ICMP, ARP	
IP mode	Static IP, DHCP (Dynamic Host Configuration Protocol)	
Flow control	Hardware (RTS / CTS)	

2) Ethernet I/F cable



3) Ethernet I/F signal descriptions

Pin No.	Signal name	Assignment (Color)	Function
1	TD+	White Orange	Transmit +
2	TD-	Orange	Transmit -
3	TCT	White Green	Receive +
4	NC	Blue	
5	NC	White Blue	
6	RCT	Green	Receive -
7	RD+	White Brown	
8	RD-	Brown	

3-5-4 WLAN

1) WLAN specifications

Support IEEE 802.11b/g/n Infrastructure, Ad-hoc mode.

[Frequency Band and Operating Channels]

Item	Description
Frequency band	2.4000 – 2.497 GHz
Modulation	OFDM with BPSK, QPSK, 16QAM, 64QAM (11g) BPSK, QPSK, CCK (11b)
Data rate (auto fallback)	11n: 135/121.5/108/81/54/40.5/27/13.5Mbps 130/117/104/78/52/39/26/13Mbps 65/58.5/52/39/26/19.5/13/6.5Mbps 11g: 54/48/36/24/18/12/9/6Mbps (adaptive) 11b: 11/5.5/2/1Mbps (adaptive)
Protocol	TCP, UDP, IP, ICMP, ARP

[Security]

- WEP64/128
- WPA/WPA2 (TKIP/AES-CCMP) PSK
- HTTPS (SSL2.0, SSL3.0, TLS1.0)

2) WLAN USB Adapter

BIXOLON printers require WLAN USB adapter to use the wireless LAN function.

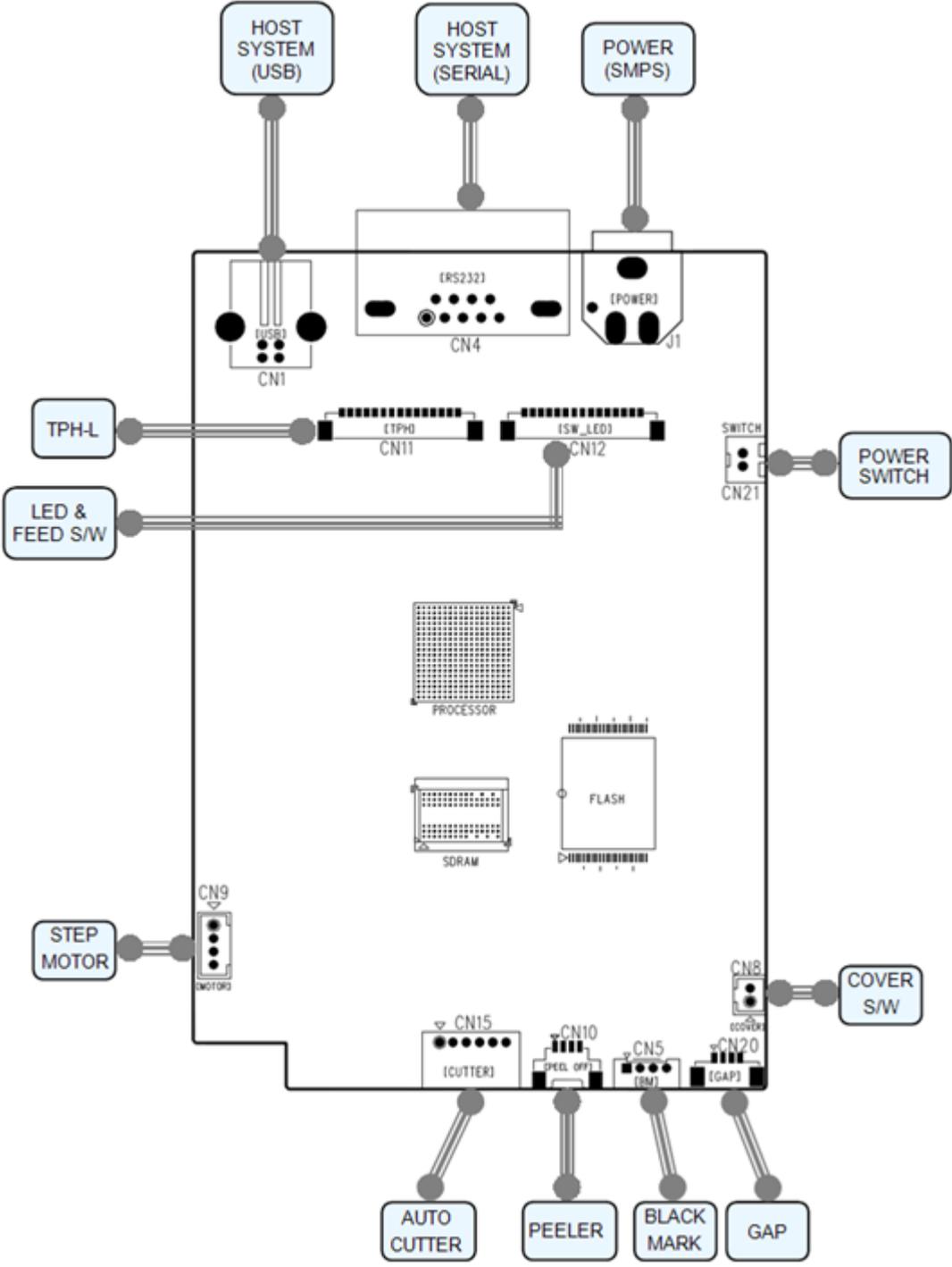
WLAN USB Adapter for BIXOLON printers should be available from BIXOLON.

USB Adapter from market not BIXOLON is not guaranteed to be working properly with BIXOLON printers.

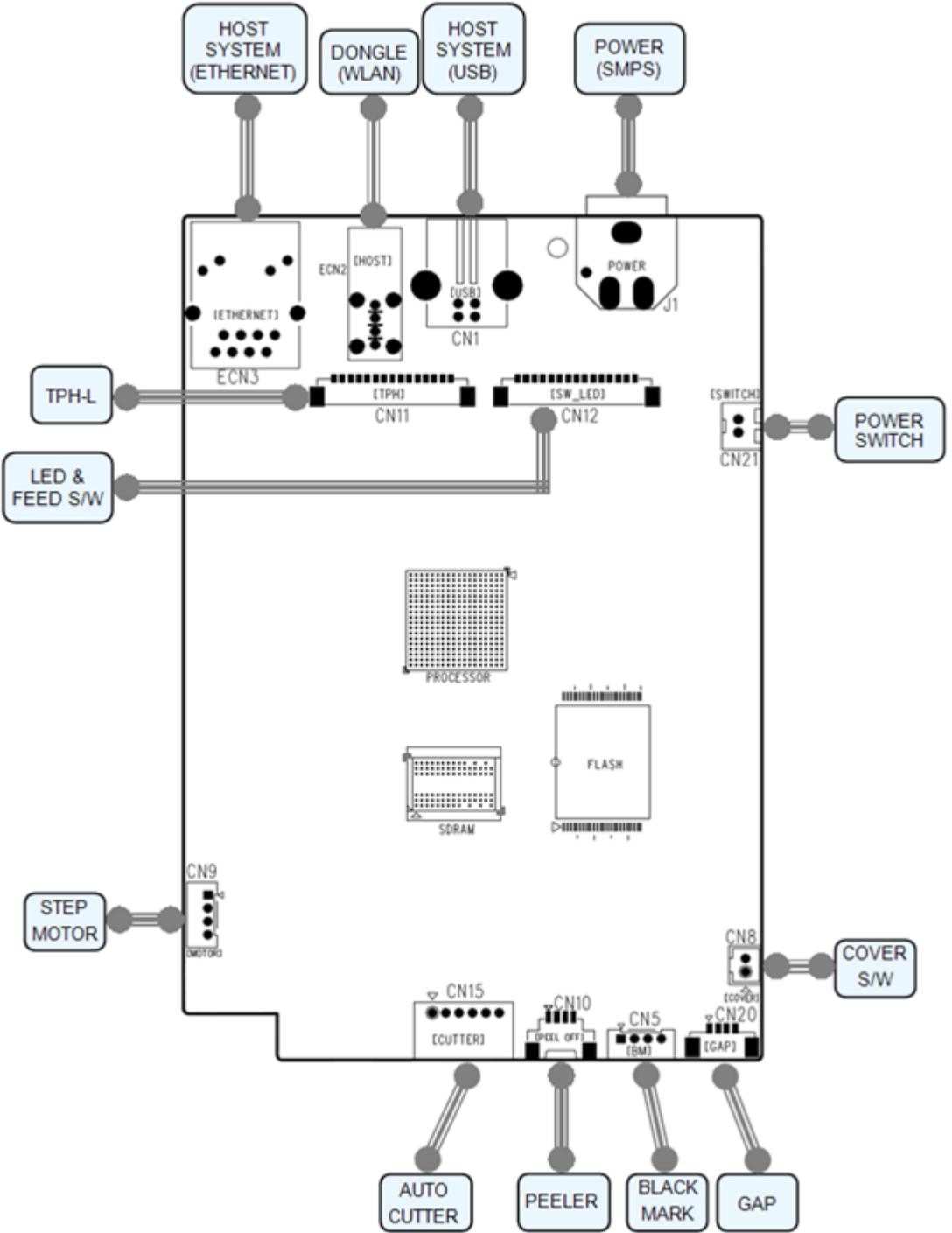
4. Hardware

4-1 Wiring Diagram

4-1-1 SLP-DX220 Board Wiring Diagram

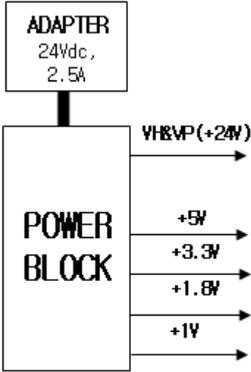
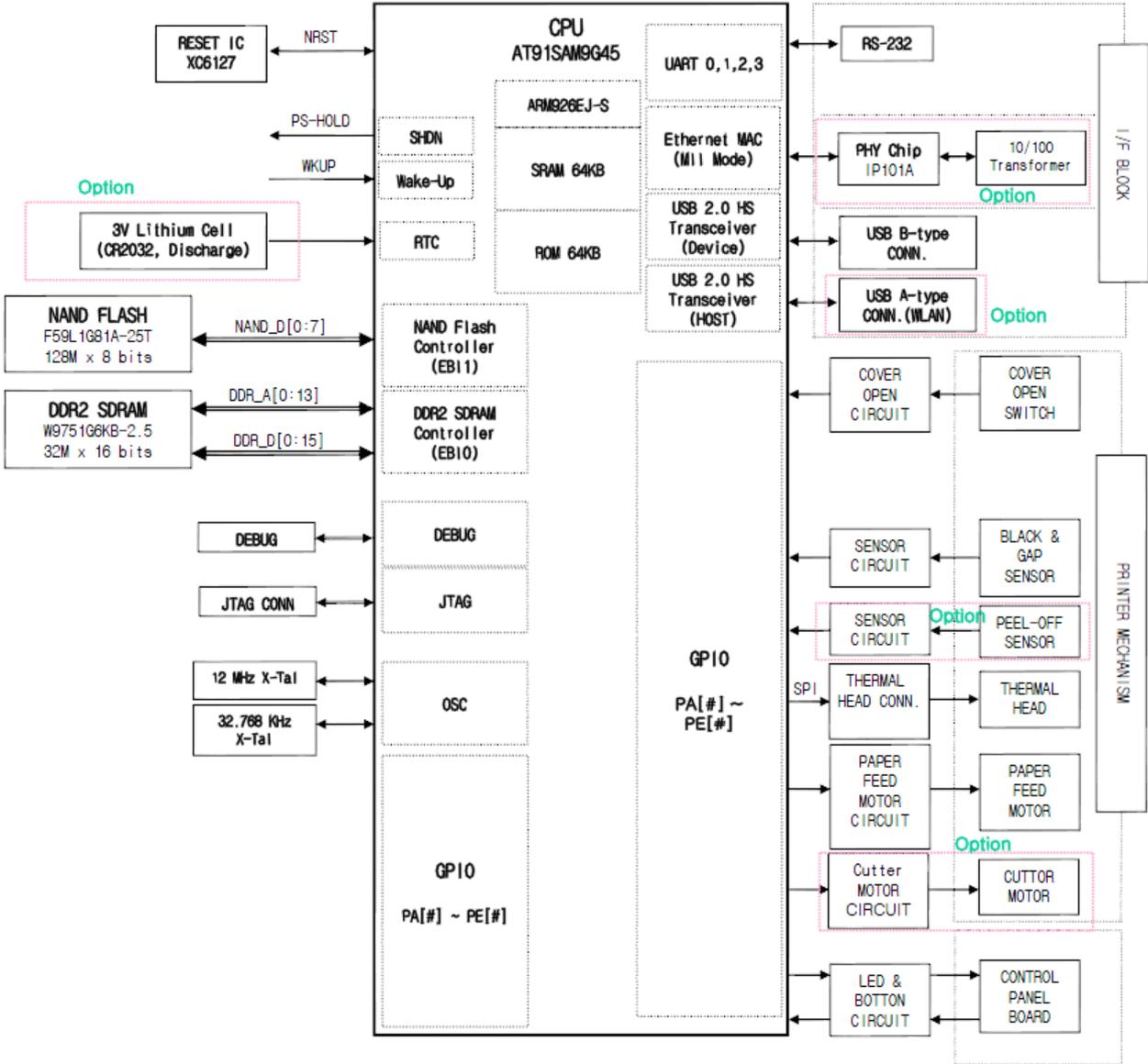


4-1-2 SLP-DX220E Board Wiring Diagram



4-2 Block Diagram

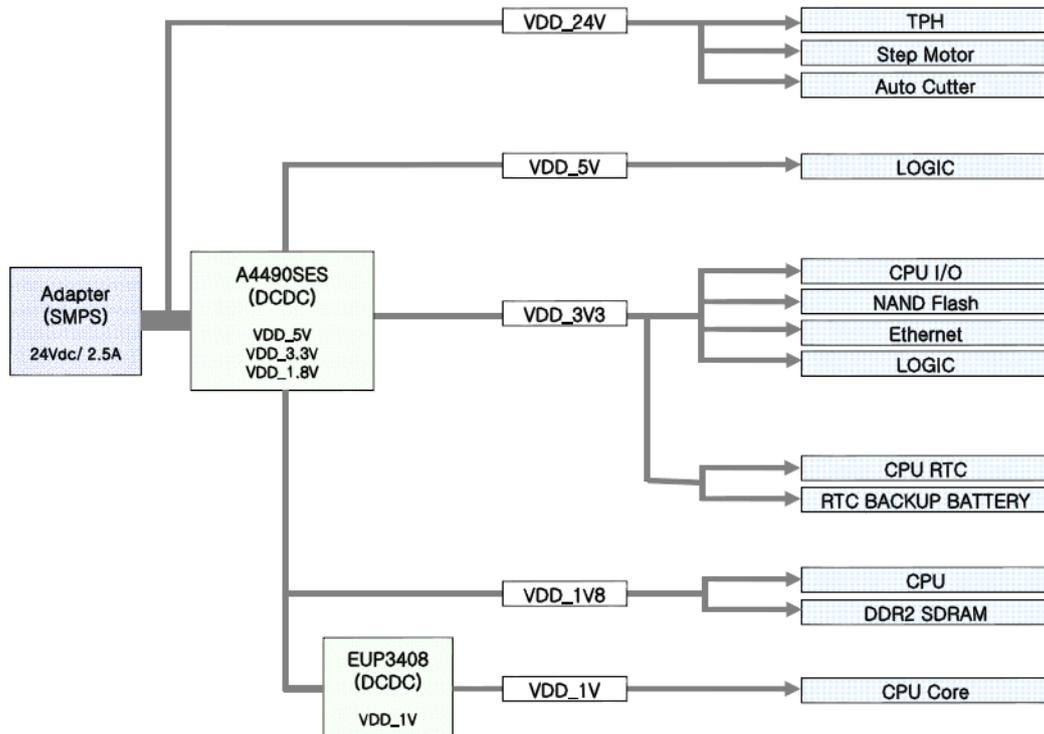
SLP-DX220(E) BLOCK_DIAGRAM



4-3 Special Circuit Description

4-3-1 Power Circuit

This system is operated under 100Vac or 240Vac. The power circuit supplies the three differential DC voltage sources.



No.	VOLTAGE	DESCRIPTION
1	VDD_24V (+24VDC)	Step Motor & Auto Cutter Voltage
2	TPH_24V (+24VDC)	Thermal Printer Head (TPH) Voltage
3	VDD_5V (+5VDC)	Logic IC Voltage
4	VDD_3V3 (+3.3VDC)	CPU I/O, NAND Flash, Ethernet, RTC, LOGIC Etc. Voltage
5	VDD_1V8 (+1.8VDC)	CPU, DDR2 SDRAM Voltage
6	VDD_1V (+1VDC)	CPU Core Voltage

- 1) Feed, Auto Cutter Motor Voltage, TPH Driving Voltage : +24VDC
+24VDC is supplied from SMPS.
This voltage is used as a Step motor driving voltage and a source voltage of the other voltage sources and TPH Driving Voltage.
- 2) Logic IC Voltage : +5VDC
Change the input +24VDC to +5VDC by a regulation. U7(A4490EESTR)
- 3) CPU I/O, NAND FLASH, Ethernet, RTC and Etc. Voltage : +3.3VDC
Change the input +24VDC to +3.3VDC by a regulation. U7(A4490EESTR)
- 4) DDR2 SDRAM Voltage : +1.8VDC
Change the input +24VDC to +1.8VDC by a regulation. U7(A4490EESTR)
- 5) CPU Core Voltage : +1VDC
Change the input +5VDC to +1VDC by a regulation. U13(EUP3408)

4-3-2 Reset Circuit

Reset signal is a signal in order to start-up CPU under Power-On.
Reset circuit uses a reset IC (XC6127N27C, U24). When +3.3Vdc is fallen under +2.7Vdc by Power-Off, reset signal prohibits the system from malfunctioning by lowering down to 0V.

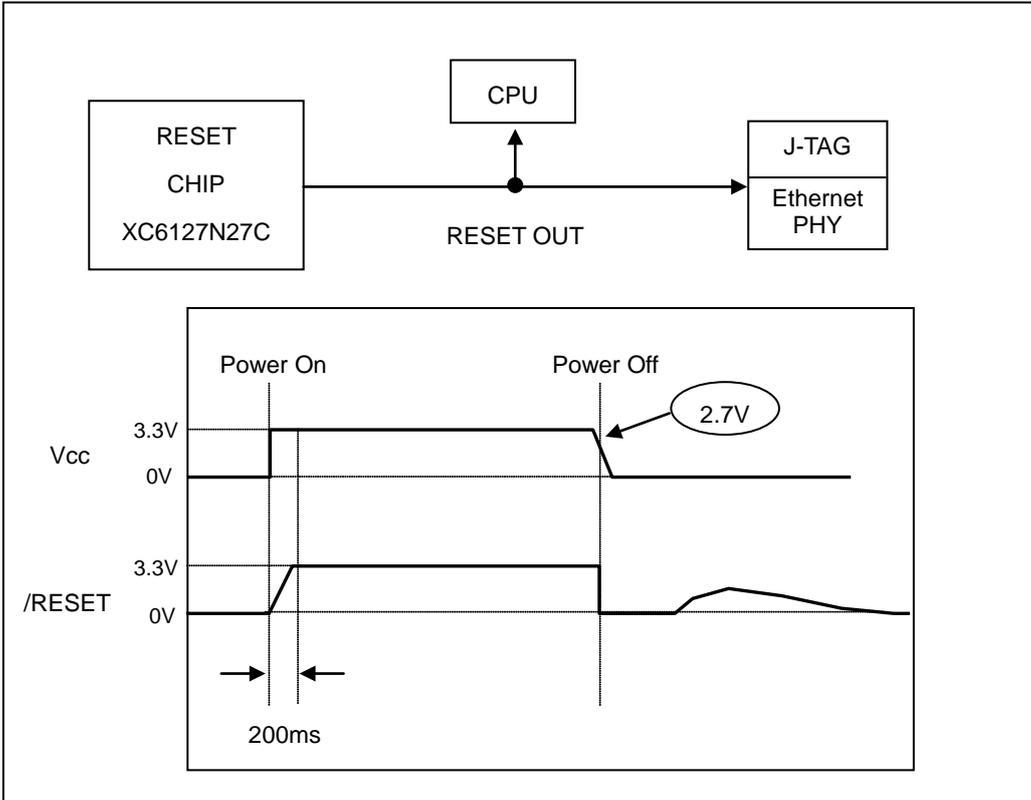
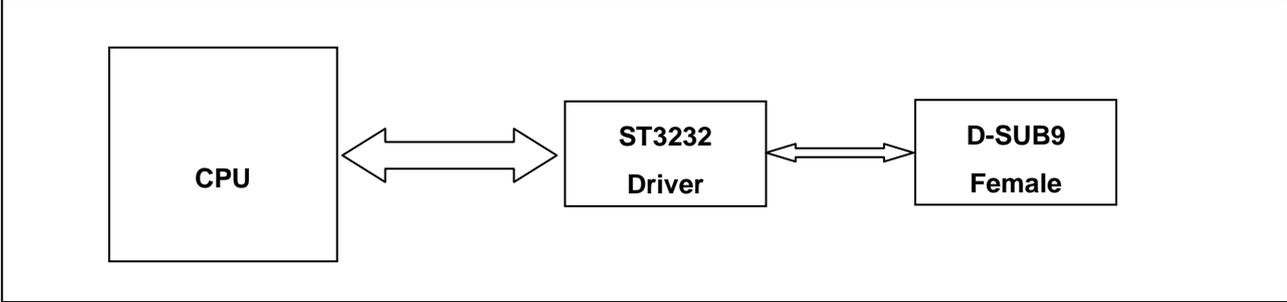


Figure 4-1 Reset Circuit

4-3-3 RS232C Communication Block Diagram

The CPU and RS-232C driver (ST3232) are used for serial communication.

1) RS232C Communication block diagram



2) RS232C Communication waveform

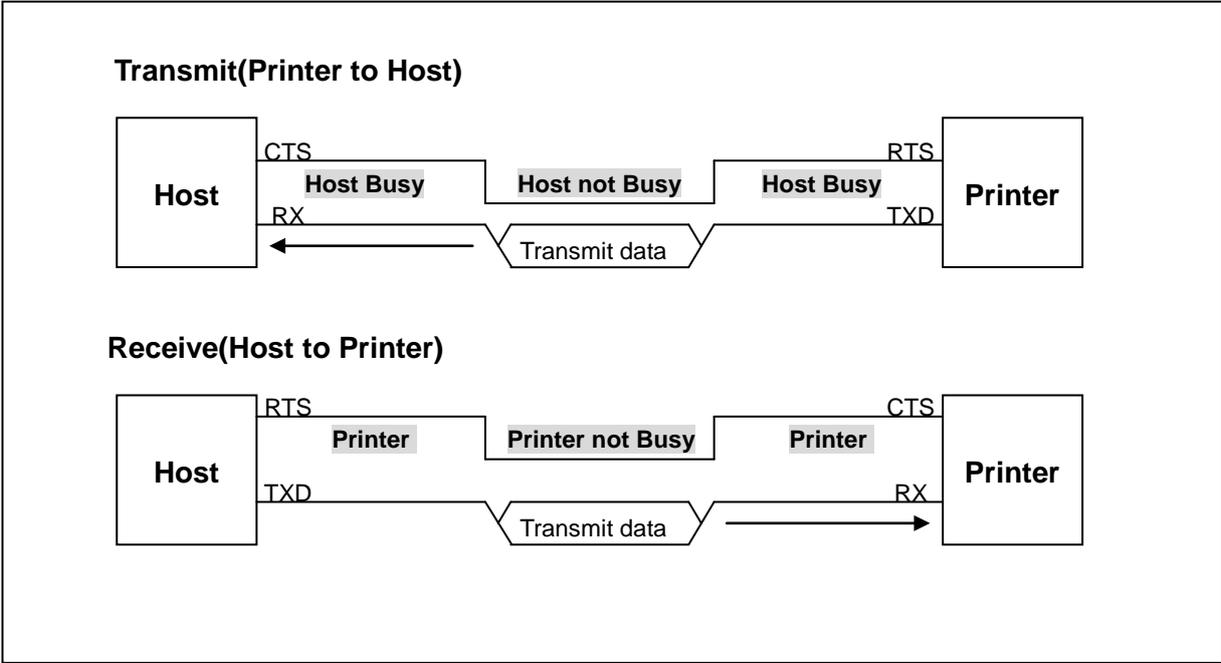


Figure 4-3 RS232C Communication Waveform

4-3-4 USB Communication Block Diagram

The printer supports the USB (Universal Serial Bus). The transfer type is the BULK

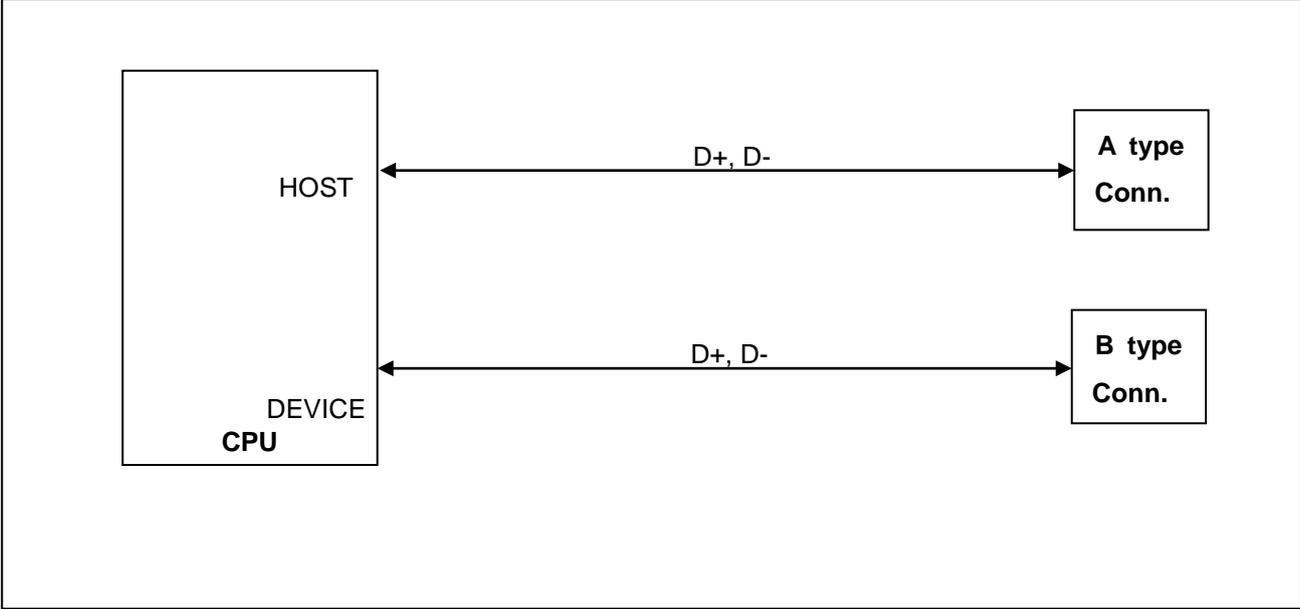


Figure 4-4 USB 2.0 Communication Block Diagram

4-3-5 Ethernet Communication Block Diagram

The printer supports the Ethernet. The Network type is 10/100 Base-T All in one type. (Auto detection)

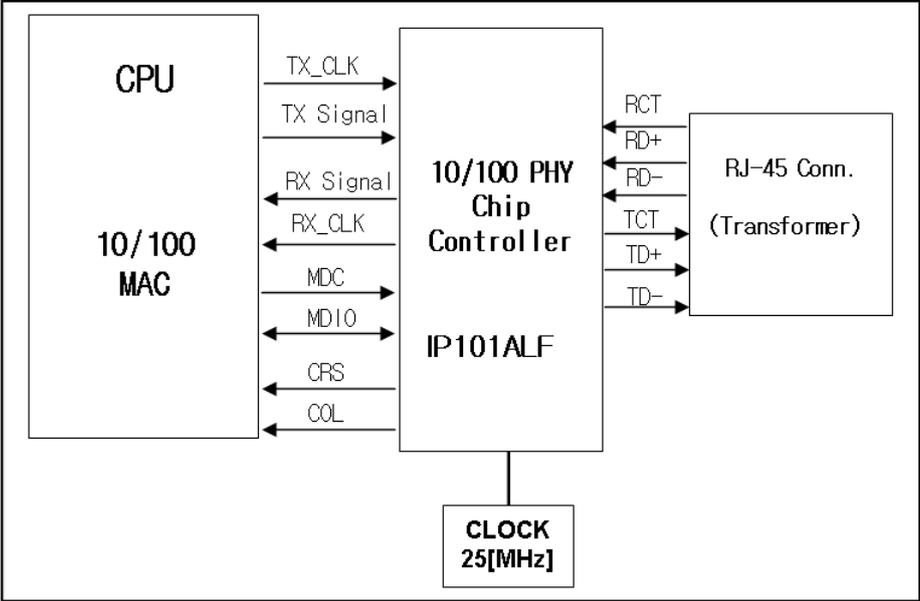


Figure 4-5 Ethernet Communication Block Diagram

4-3-6 Thermal Pinter Circuit

First, the CPU sends a serial clock and serial data 432bits (144x3Chips, 54bytes) to the shift register of the TPH. Second, the CPU sends a Latch signal to the TPH. Then the Data of shift register are moved to the Latch register. After that the CPU sends a strobe signal to the TPH. Then the TPH outputs the serial data. Each strobe signal controls the each dot of TPH.

Table 4-1 Printer Head Strobe Processing

Strobe No.(TPH)	Dot No.	Dots/STB	Strobe pin(CPU)
_STB2	1 ~ 144	144	TPH_STB2
_STB1	145 ~ 288	144	TPH_STB1
_STB1	289 ~ 432	144	TPH_STB1

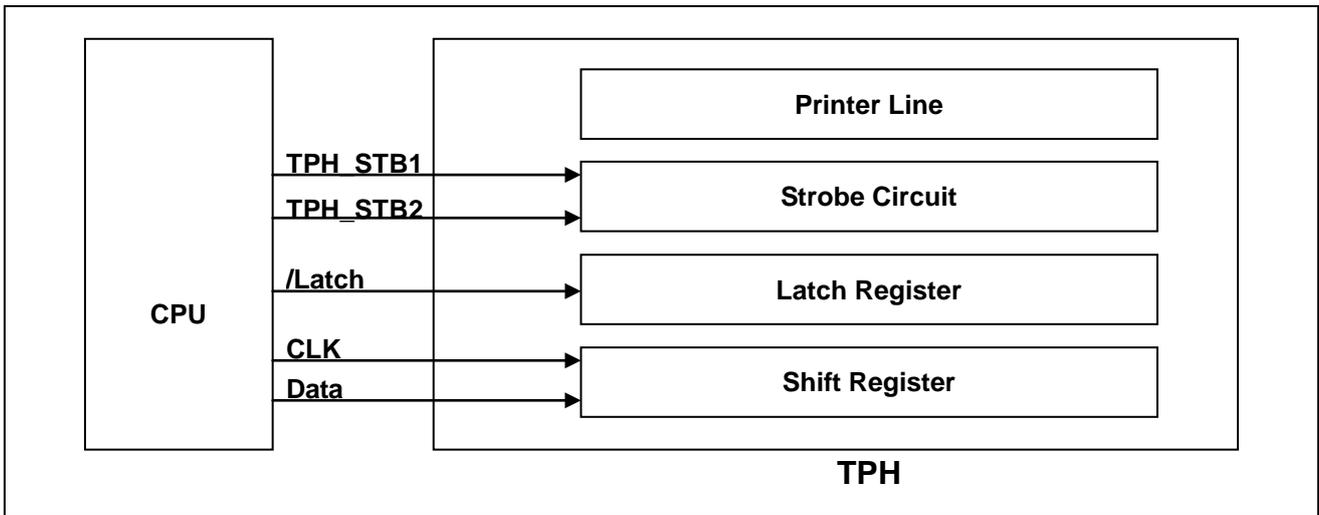


Figure 4-6 Thermal Printer Block Diagram

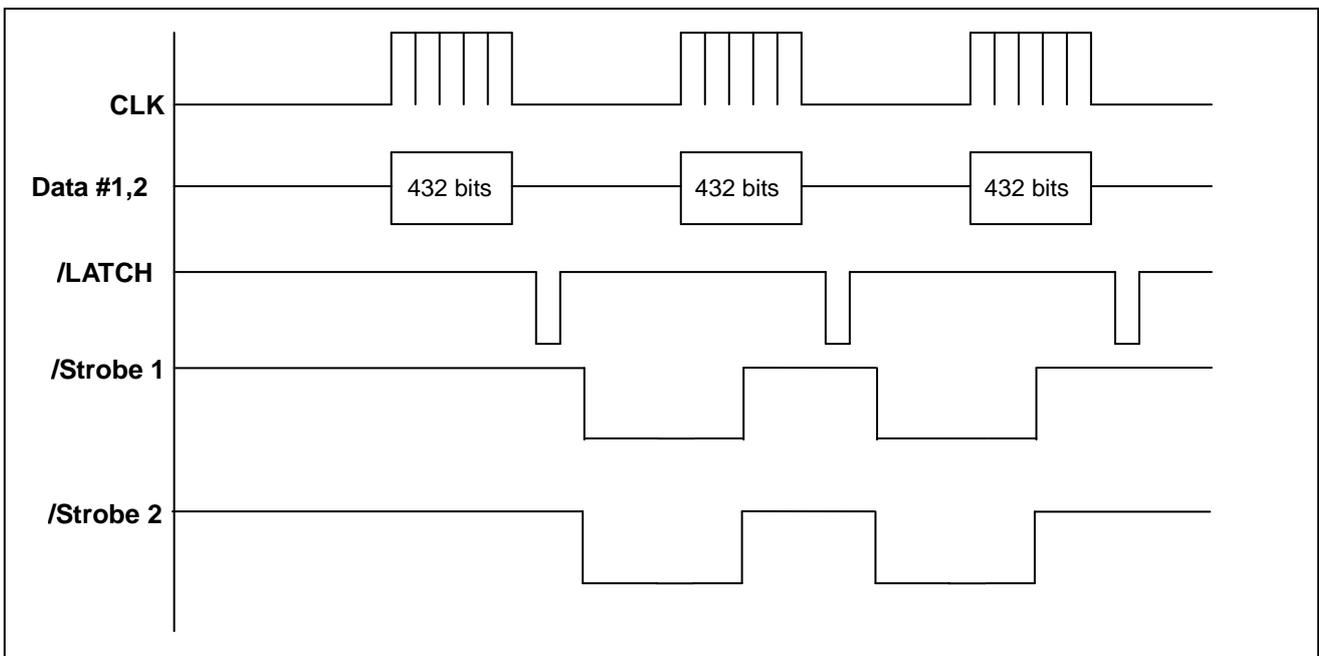


Figure 4-7 Thermal Printer Timing Waveform

5. Disassembly and Assembly

5-1 CASE-LOWER Block

- 1) Remove the four screws①.
- 2) Separate the FOOT-RUBBER②, the COVER-DIP③ and the CASE-LOWER④ from the printer.
- 3) Separate the COVER-HINGE⑤, from the CASE-LOWER④.

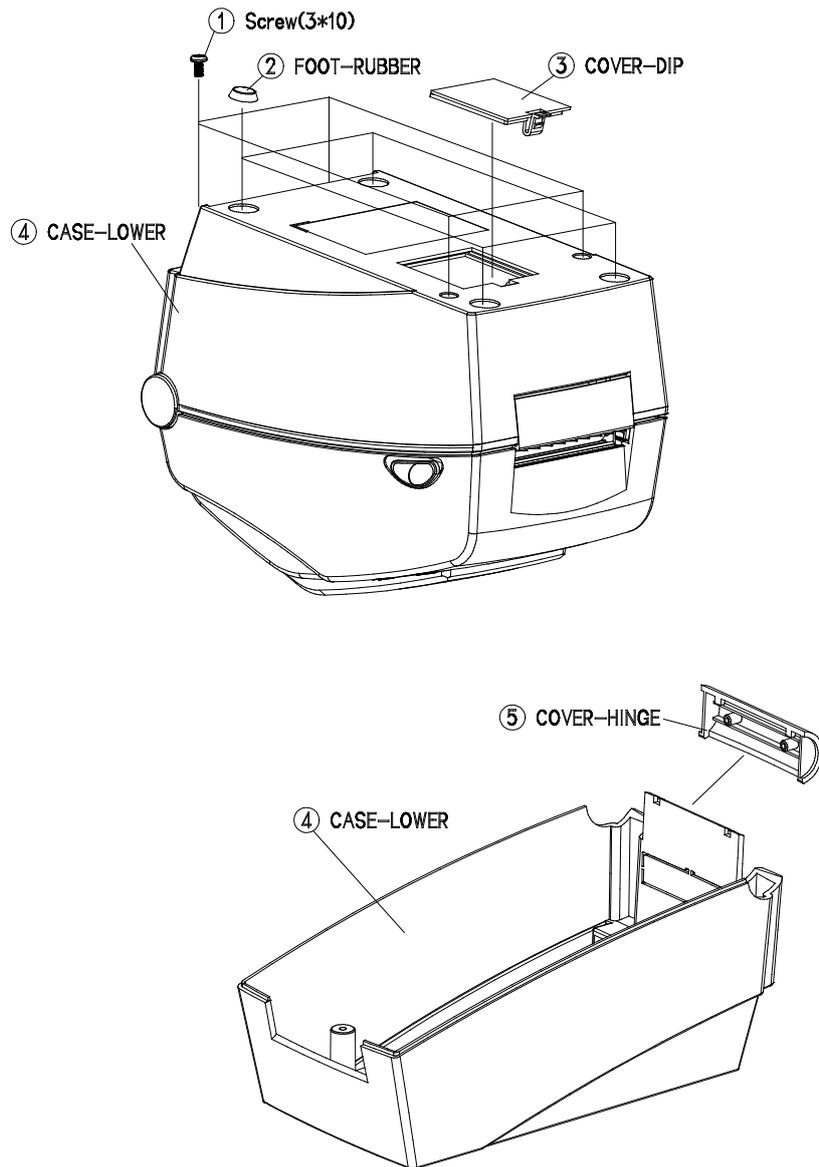


Figure 5-1 Disassembly CASE-LOWER #1

5-2 MAIN-PCB Block

- 1) Remove the two screws①.
- 2) Separate the HARNESS wires④~⑩ from the MAIN-PCB.
- 3) Separate the MAIN-PCB②, SHEET-PCB③ from the Printer.

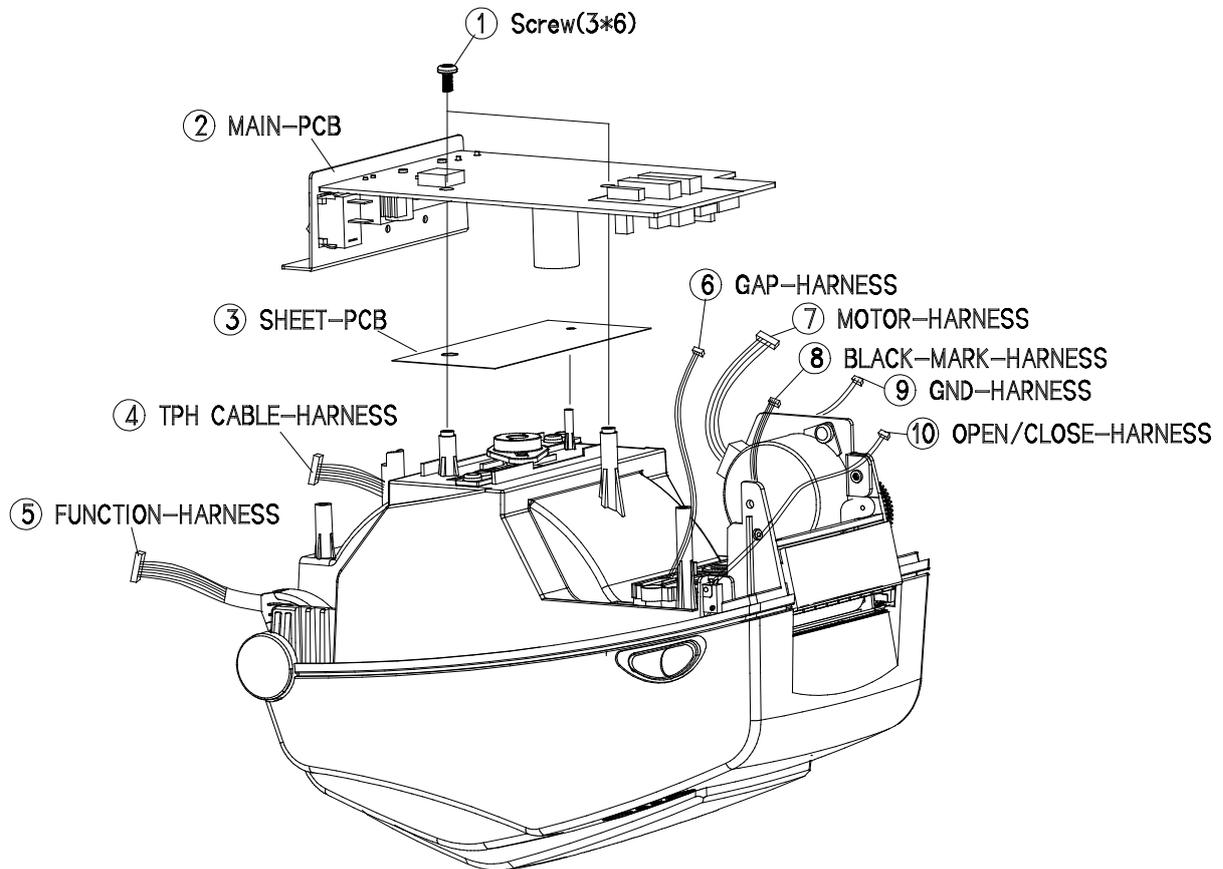


Figure 5-2 Disassembly MAIN-PCB #1

5-3 UPPER Block

5-3-1 UPPER-ASS'Y Block

- 1) Separate the COVER-R② and the COVER-L③ from the FRAME-LOWER-ASS'Y④.
- 2) Separate the UPPER-ASS'Y① from the FRAME-LOWER-ASS'Y④.

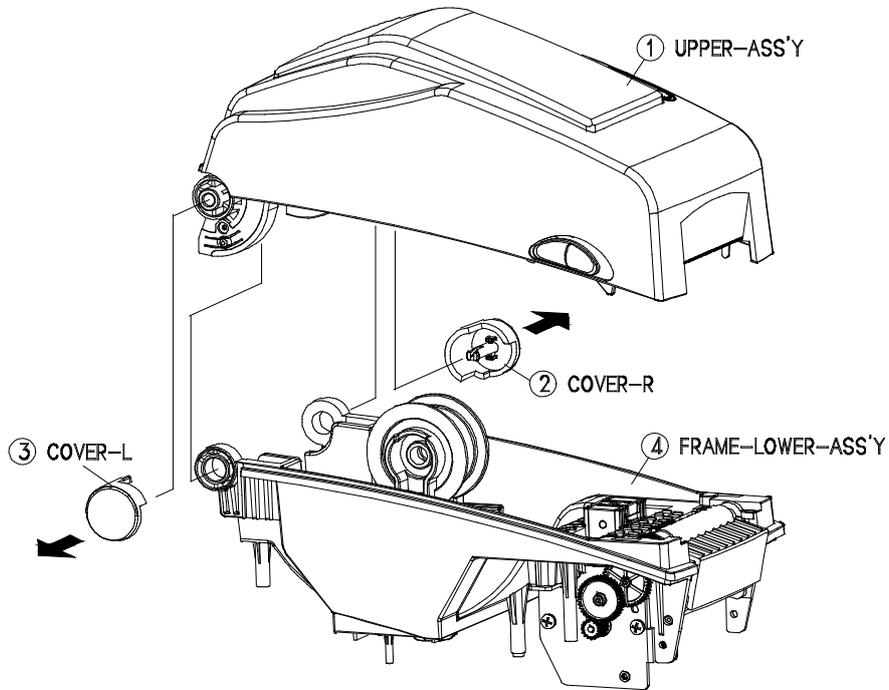


Figure 5-3 Disassembly UPPER #1

5-3-2 CASE-UPPER Block

- 1) Remove the Six screws①.
- 2) Separate the CASE-UPPER② from the FRAME-UPPER⑪.
- 3) Remove the two screws⑨.
- 4) Separate the MANUAL-CUTTER⑩ from the CASE-UPPER②.
- 5) Separate the parts③~⑧ from the CASE-UPPER②.

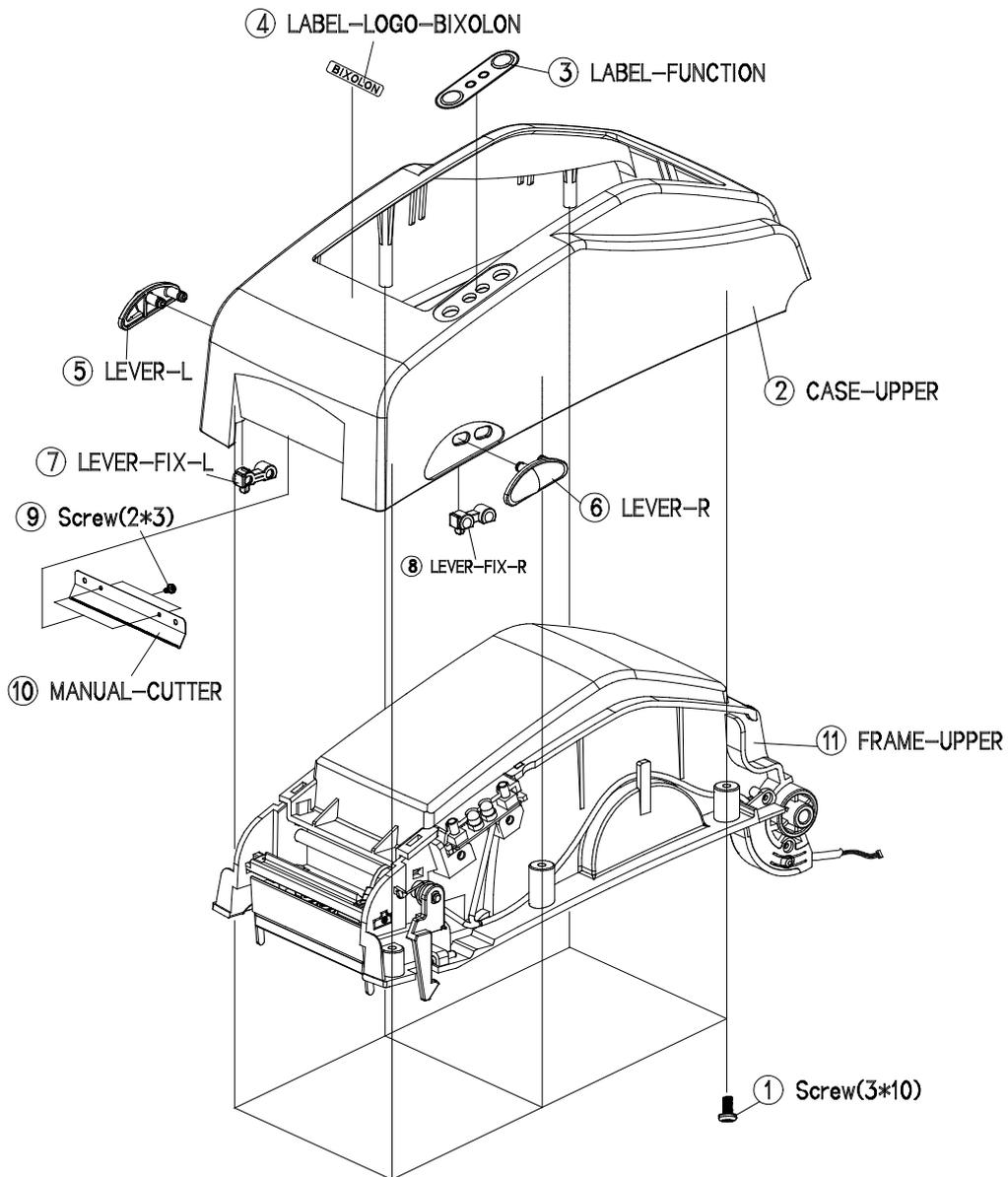


Figure 5-4 Disassembly UPPER #2

5-3-3 COVER-TOP Block

1) Separate the COVER-TOP① and the COVER-UP② from the FRAME-UPPER③.

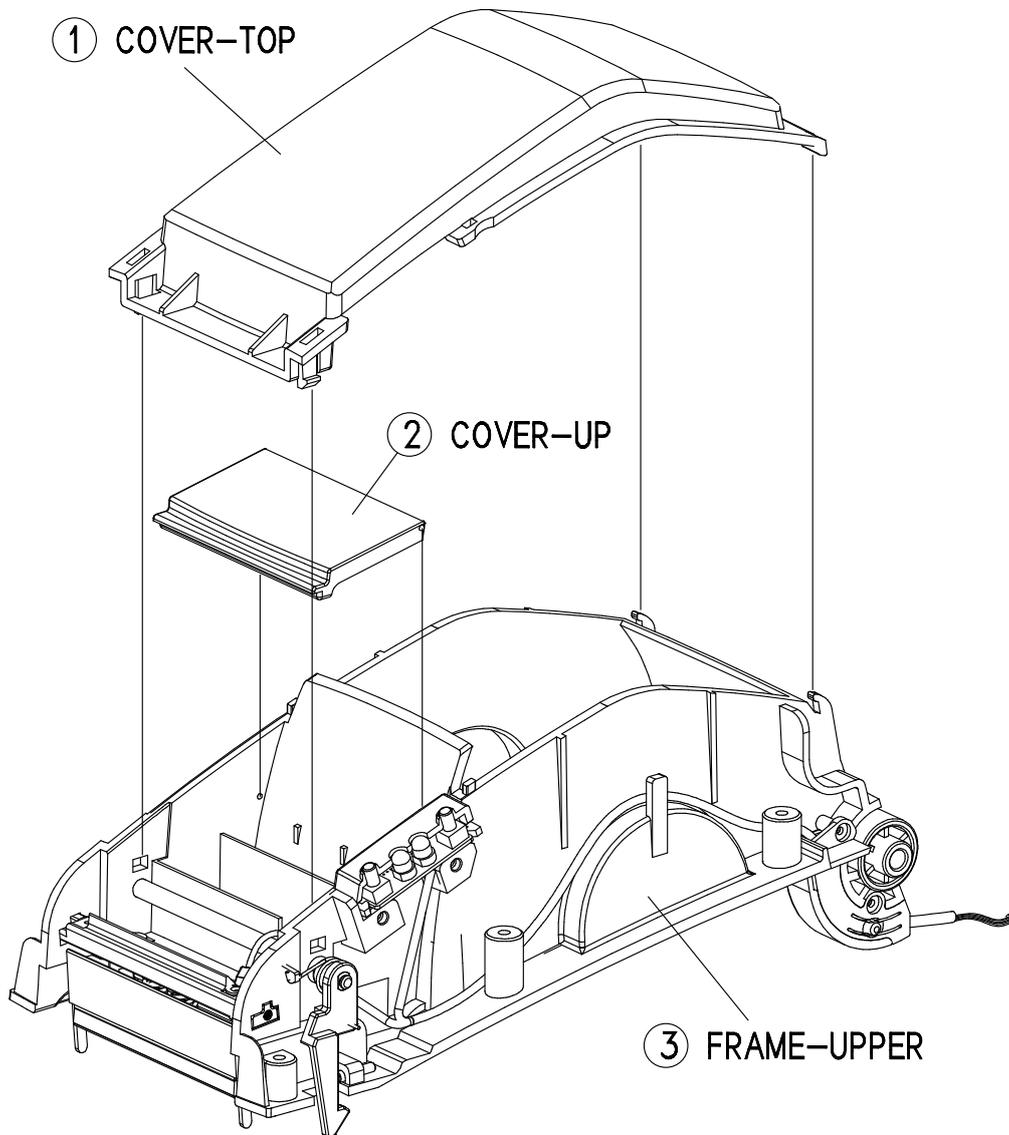


Figure 5-5 Disassembly UPPER #3

5-3-4 TPH-ASS'Y Block

- 1) Separate the TPH-ASS'Y① from the FRAME-UPPER⑪.
- 2) Remove the one screw② and two screws③ and four screws④.
- 3) Separate the parts⑤~⑩ from the FRAME-UPPER⑪.

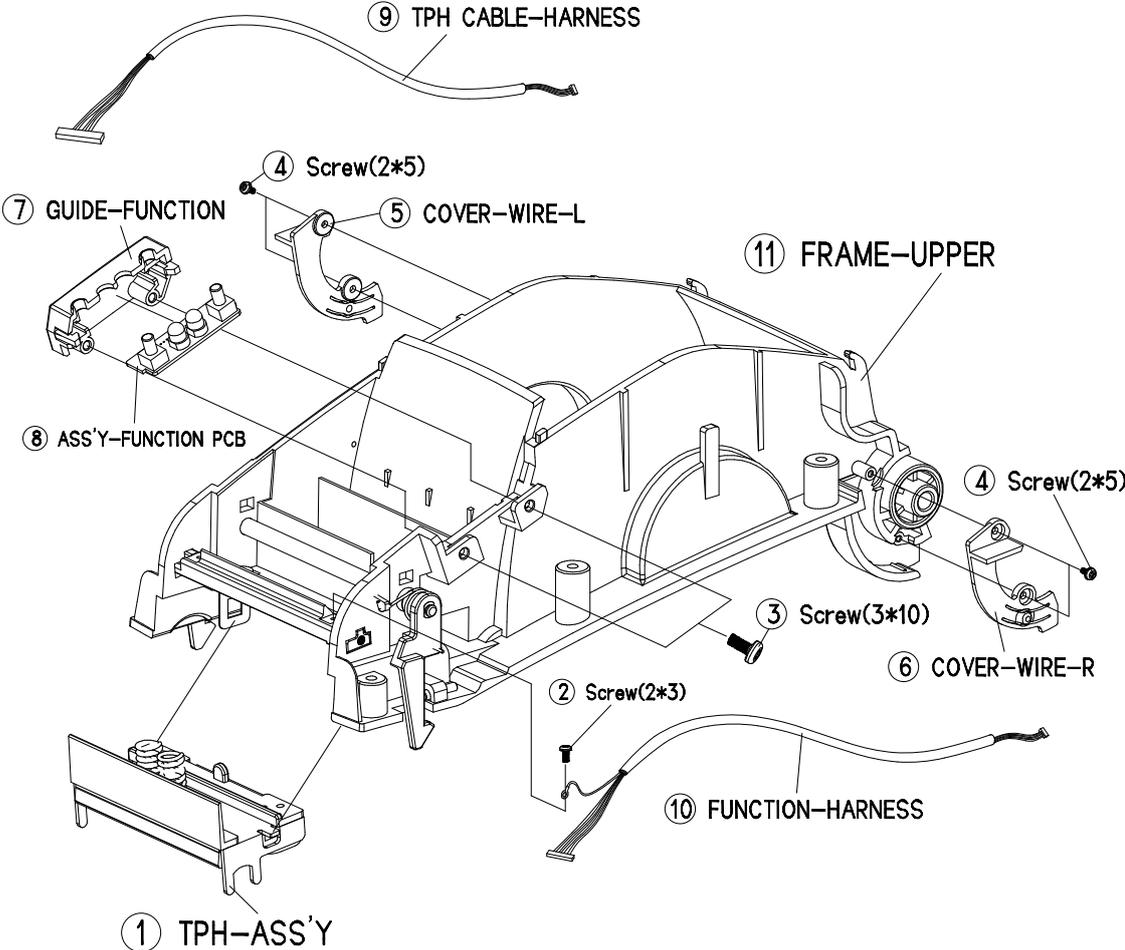


Figure 5-6 Disassembly UPPER #4

5-3-5 TPH Block

- 1) Remove the two screw①~③.
- 2) Separate the parts④~⑨ from the BRK'T-TPH⑫.
- 3) Remove the two screw⑩
- 4) Separate the BRK'T-GUIDE⑪ from the BRK'T-TPH⑫.

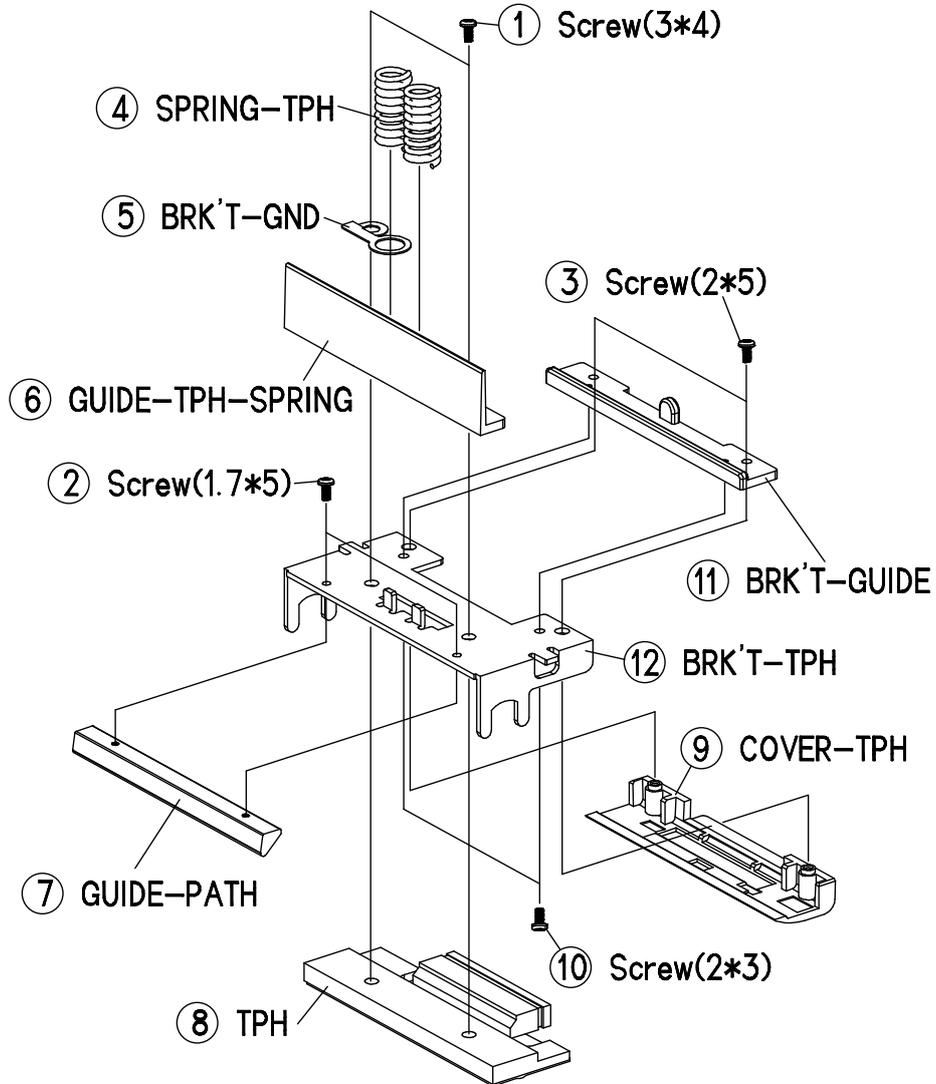


Figure 5-7 Disassembly UPPER #5

5-3-6 DOOR-LOCK and ROLLER-PAPER Block

- 1) Remove the two E-Rings①.
- 2) Separate the Parts②~⑦ from the FRAME-UPPER⑪.
- 3) Remove the two WASHER-PCT-SLIP⑧.
- 4) Separate the Parts⑨~⑩ from the FRAME-UPPER⑪.

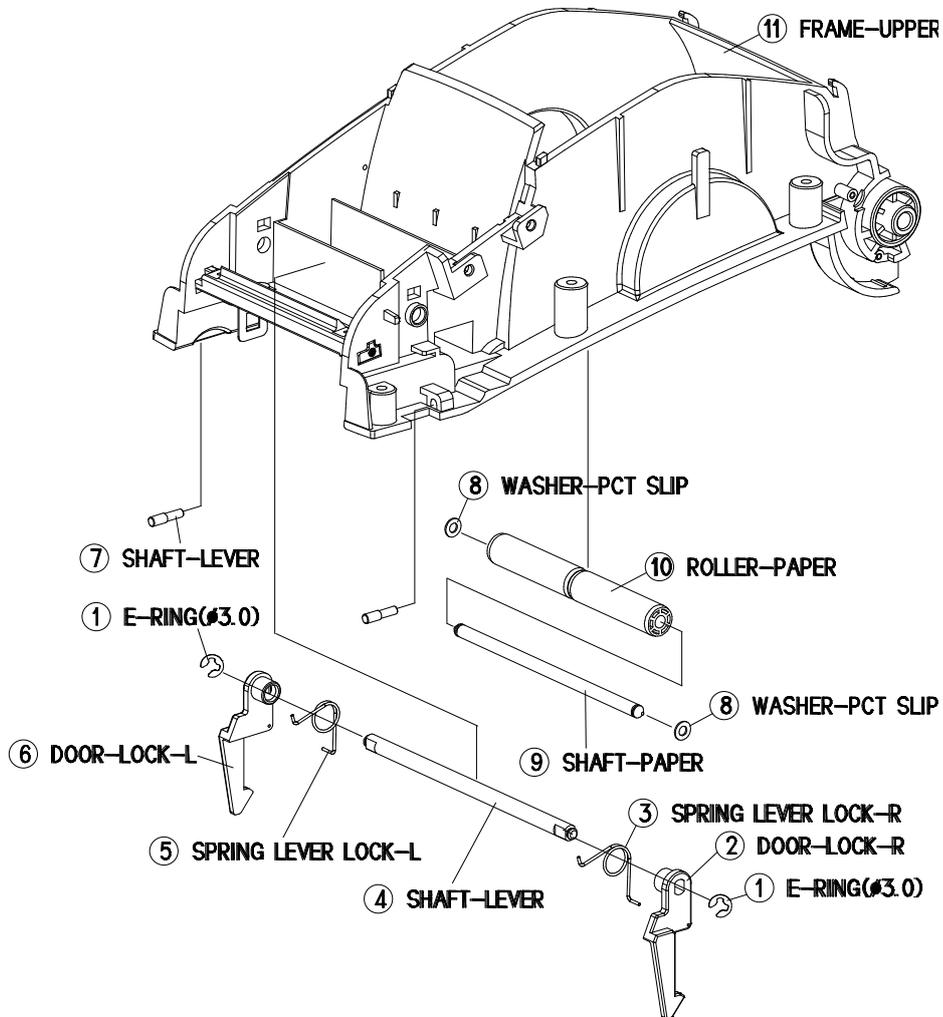


Figure 5-8 Disassembly UPPER #6

5-3-7 Etc Block

- 1) Remove the one screw①~③.
- 2) Separate the BRK'T-SP-TPH④ and the SPRING-HOOK⑤ HOOK-TPH-R⑥ from the FRAME-UPPER⑧.
- 3) Separate the LABEL-INSERT-PAPER⑦ from the FRAME-UPPER⑧.

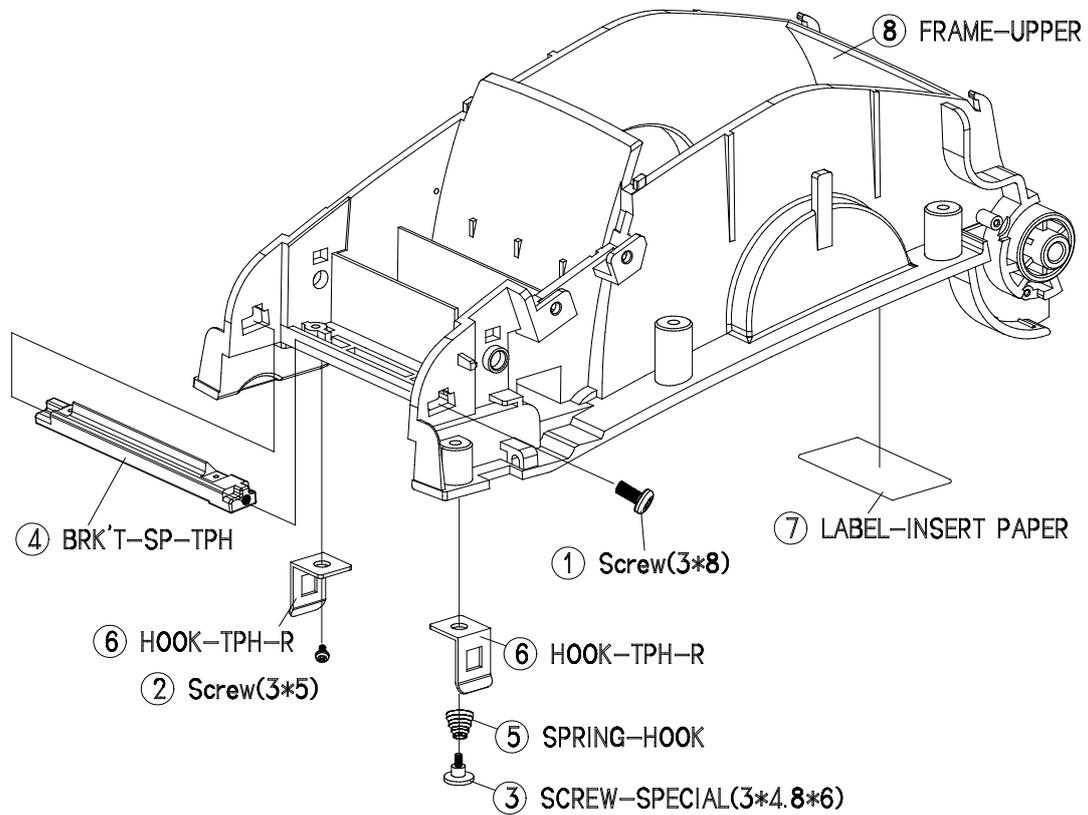


Figure 5-9 Disassembly UPPER #7

5-4 FRAME-LOWER Block

5-4-1 HOLDER-PAPER Block

- 1) Remove the one Screws①.
- 2) Separate the LINK② and the SPRING-LINK③ from the FRAME-LOWER⑧.
- 3) Remove the four Screws④.
- 4) Separate the HOLDER-PAPER⑥ from the FRAME-LOWER⑧.
- 5) Separate the HOLDER-PAPER-FIXED⑦ from the HOLDER-PAPER⑥.

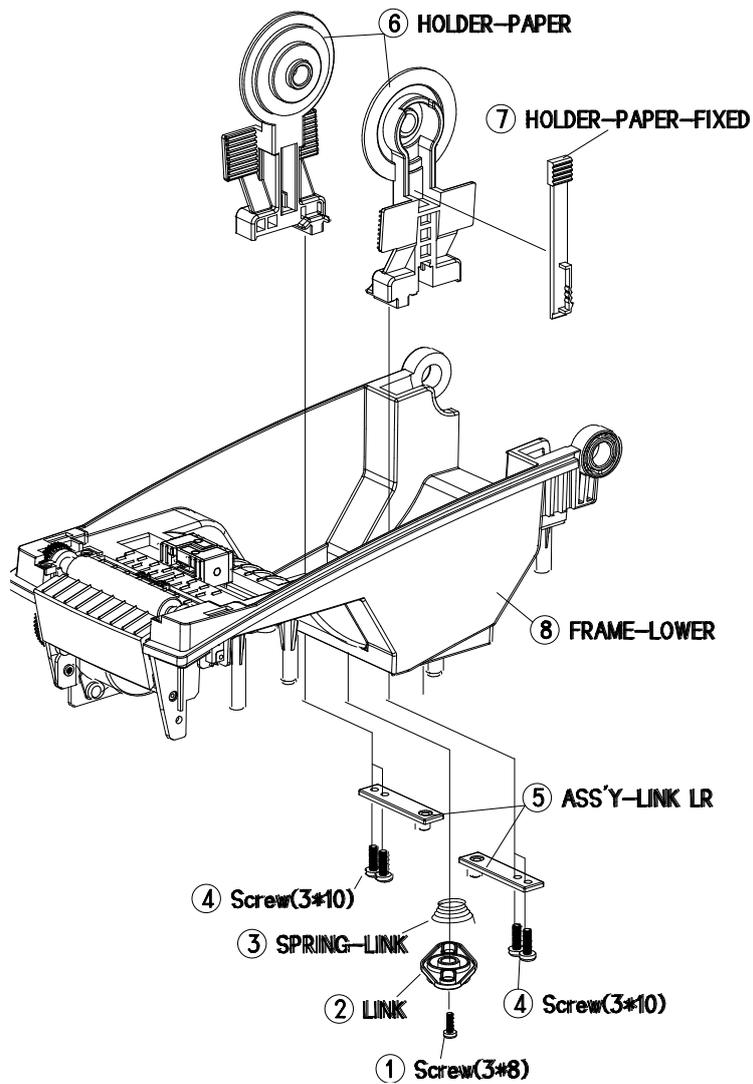


Figure 5-10 Disassembly FRAME-LOWER #1

5-4-2 MOTOR Block

- 1) Remove the two Screws①~②.
- 2) Separate the MOTOR-GND③ and BRK'T-ASS'Y④ from the FRAME-LOWER⑩.
- 3) Remove the two Screws⑤ and separate the MOTOR⑥ from the BRK'T-ASS'Y④.
- 4) Remove the two WASHER-PLAIN⑦ and separate the parts⑧~⑨ from the BRK'T-ASS'Y④.

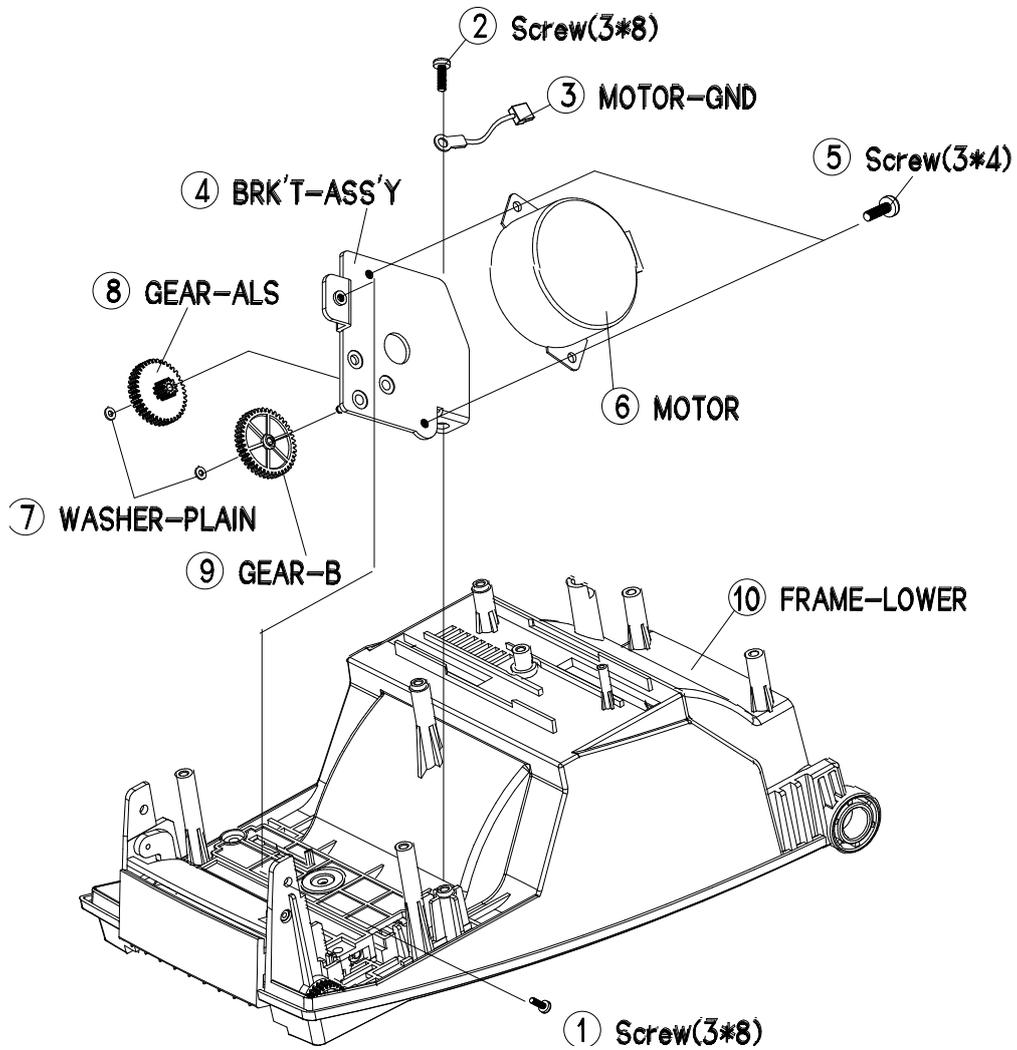


Figure 5-11 Disassembly FRAME-LOWER #2

5-4-3 GUIDE-PAPER (GAP-SENSOR) Block

- 1) Remove the two Screws① and separate the parts②~④ form the FRAME-LOWER⑫.
- 2) Remove the two Screws⑤ and separate the parts⑥~⑦ form the FRAME-LOWER⑫.
- 3) Remove the five Screws⑧ and separate the parts⑨~⑪ form the GUIDE-PAPER⑦.

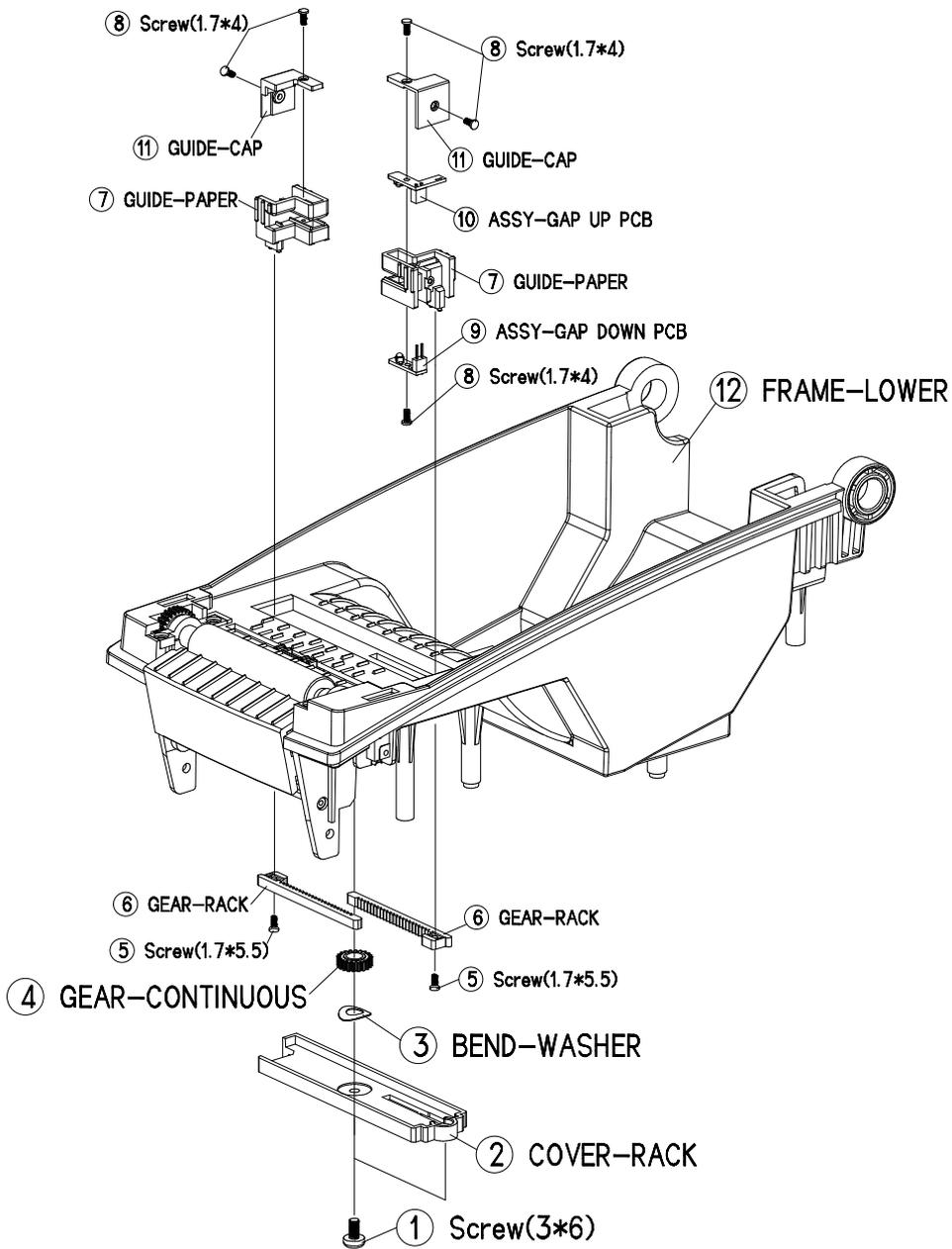


Figure 5-12 Disassembly FRAME-LOWER #3

5-4-4 BLACK-MARK-SENSOR and PLATEN-ROLLER Block

- 1) Remove the two Screws① and separate the COVER-BM-DOWN② form the FRAME-LOWER⑮.
- 2) Remove the two RING-E③ and separate the parts④~⑤ form the COVER-BM-DOWN②.
- 3) Remove the two Screws⑥ and separate the ASS'Y-BM DOWN PCB⑦ from the CASE-BM-SENSOR④.
- 4) Remove the one Screws⑧ and separate the COVER-OPEN-SWITCH⑨ from the FRAME-LOWER⑮.
- 5) Separate the COVER-STD⑩ form the FRAME-LOWER⑮.
- 6) Remove the four Screws⑥ and separate the PLATEN-ROLLER⑫ form the FRAME-LOWER⑮.
- 7) Separate the Parts⑬~⑭ from the PLATEN-ROLLER⑫.

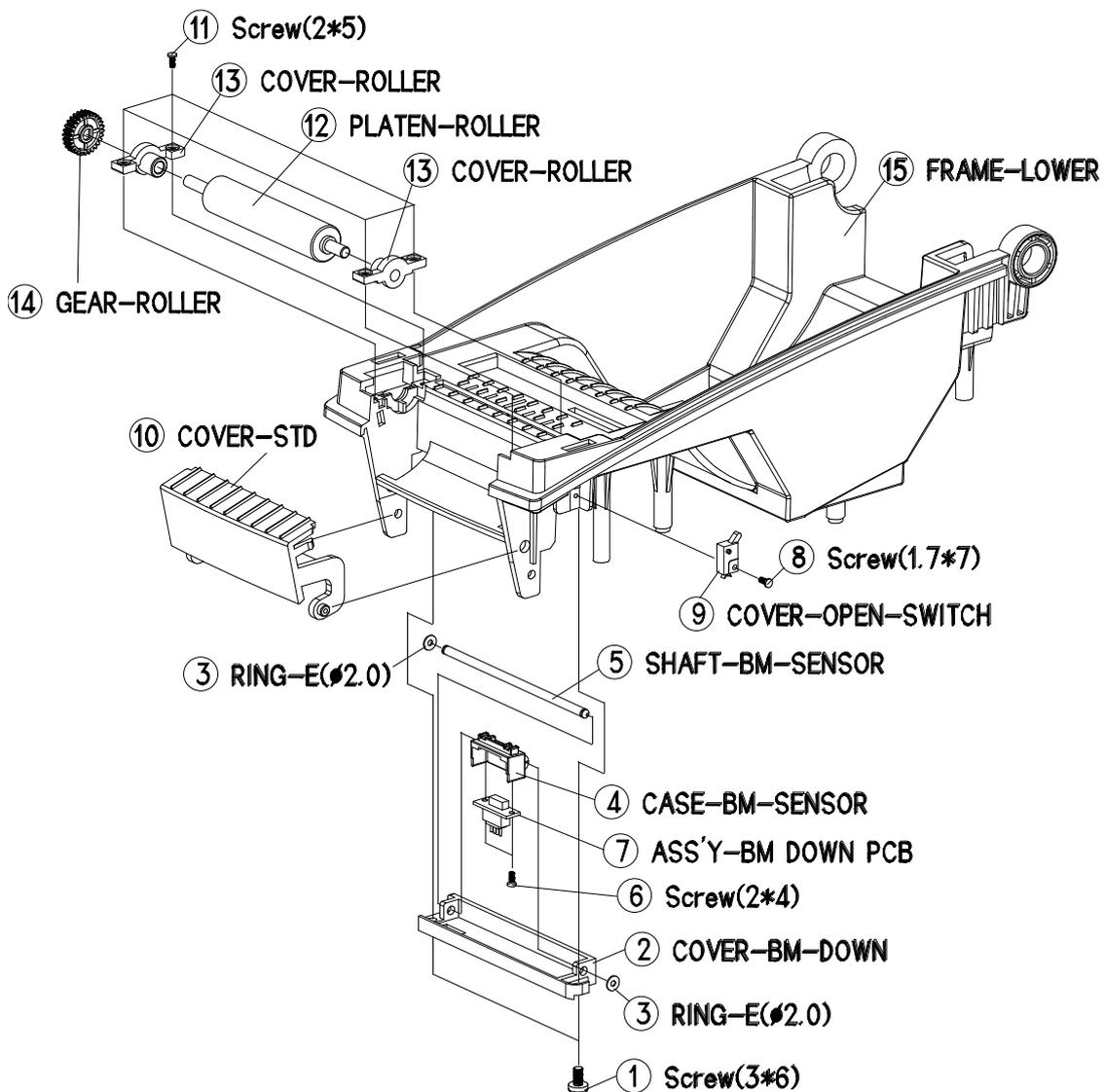


Figure 5-13 Disassembly FRAME-LOWER #4

6. Cleaning Head

Printing quality might be degraded by dust, foreign substance, adhesive substance, or other pollution materials stuck in the printer head or inside the printer.

When dirty, clean the print head as follows:

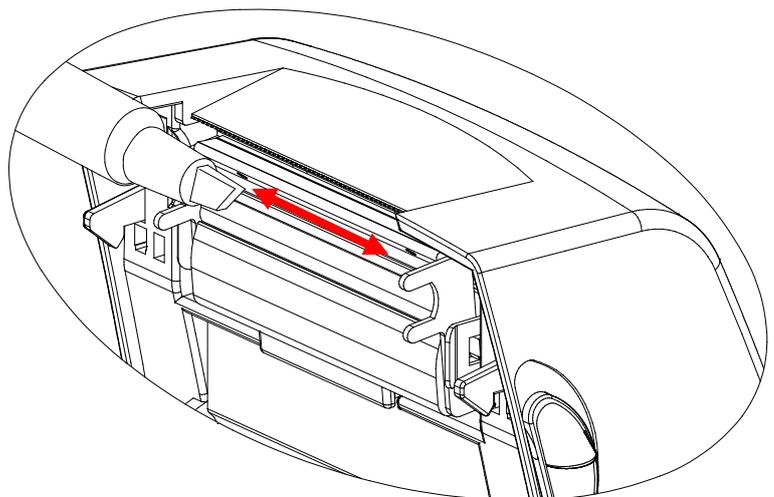
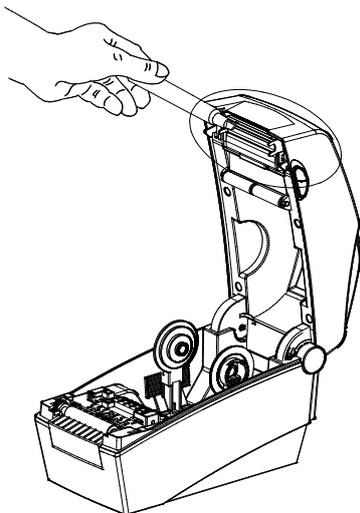
※ CAUTION

- Make sure to turn the printer power off prior to cleaning.
- As the print head gets very hot during printing, if intending to clean the print head, turn the printer power off and wait approximately 2~3 minute before commencement.
- When cleaning the print head, take care not to touch the heated portion of the print head.
→ Printer Head is susceptible to damage from static electricity, etc.
- Take care not to allow the print head to become scratched and/or damaged in any way.
- Be careful not to get your fingers pinched when opening or closing the paper cover.
Make sure to open the paper cover all the way until it locks into the open position.
- When loading roll paper, be careful not to get your fingers pinched between the paper roll and the paper holder.
- Do not touch the cutter with your hands or do not put something into the cutter. Doing so could result in an injury.

6-1 Cleaning Head

- 1) Open the paper cover and then use the cleaning pen to clean the head in the direction from the center of the head to the edges.
- 2) After cleaning the head, do not use the printer until the alcohol used for cleaning evaporates completely (1~2 min) and the printer has completely dried.

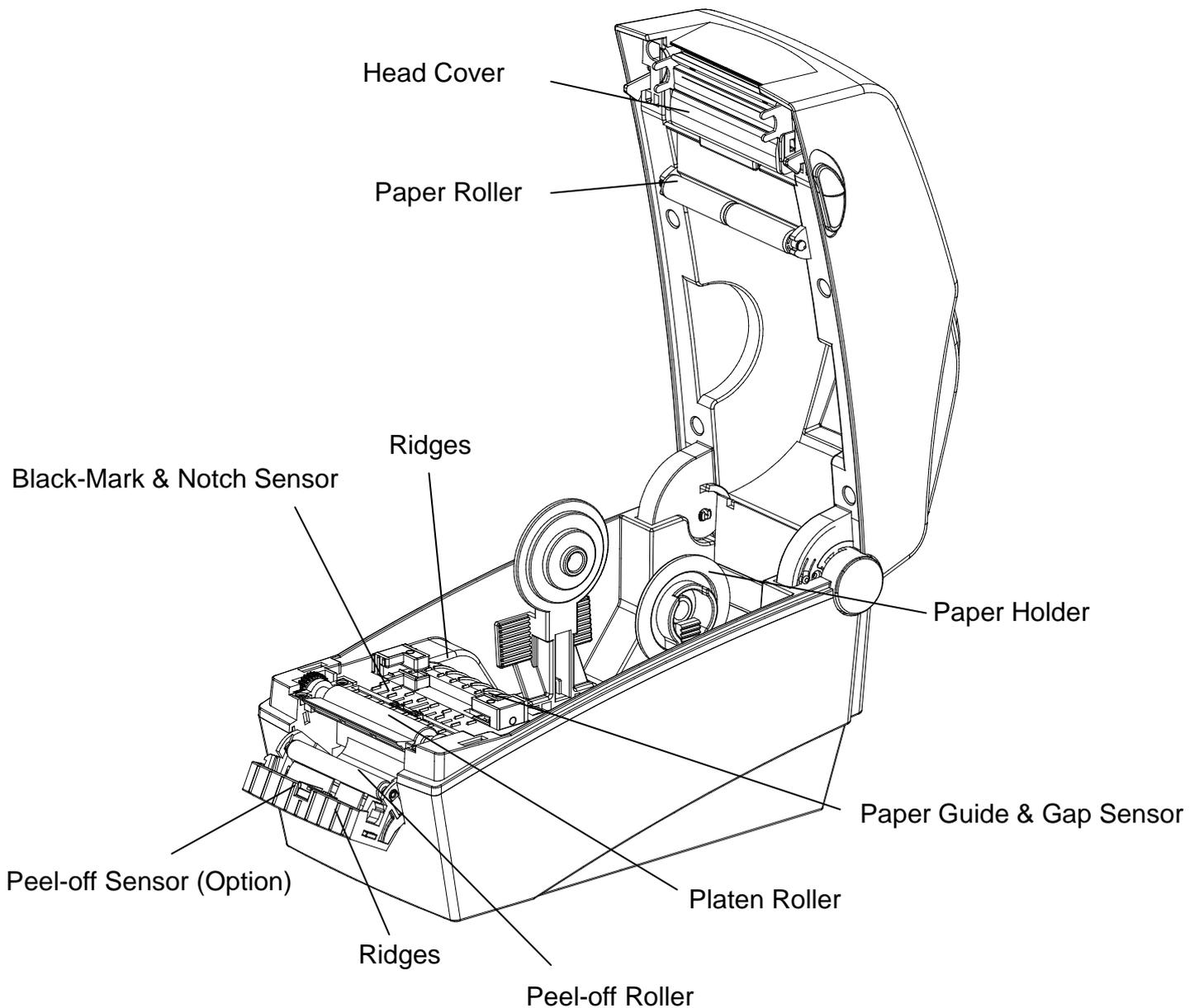
※ Perform the cleaning process each time the paper roll is replaced to prevent print quality deterioration.



6-2 Cleaning Sensors, Roller or/and Paper Path

- 1) Open the paper cover and remove the paper.
- 2) Remove any dust or foreign substance using dry cloth or cotton swab.
- 3) Soak the cloth or cotton swab in alcohol for medical use and use it to remove adhesive foreign substances or other pollution materials.
- 4) After completing the parts, do not use the printer until the alcohol evaporates completely (1 – 2 min) and the printer has completely dried.

※ Clean the parts when there is a degradation of performance in printing quality or paper detection



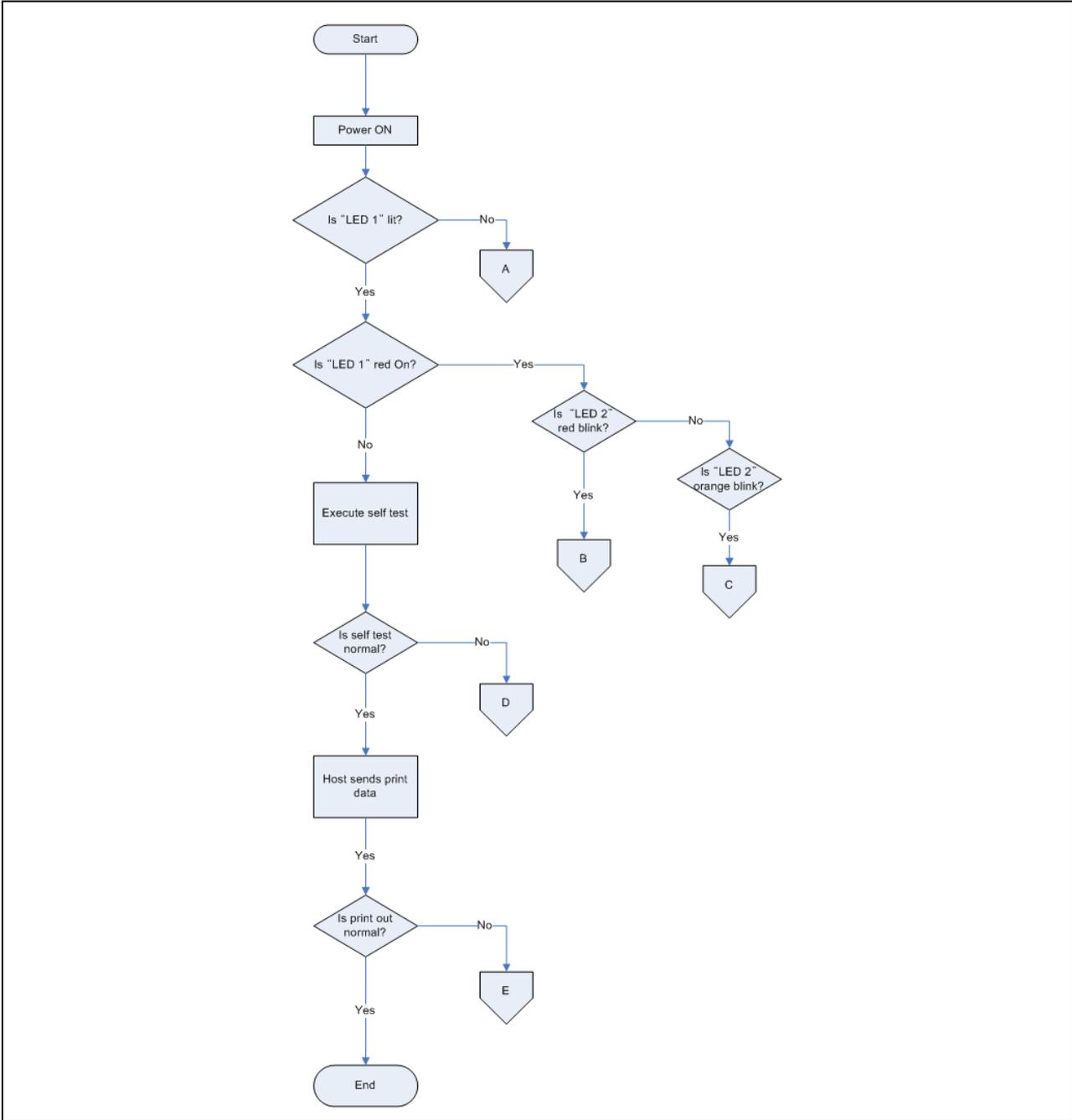
7. Troubleshooting

This character describes the methods for troubleshooting in this Label Printer.

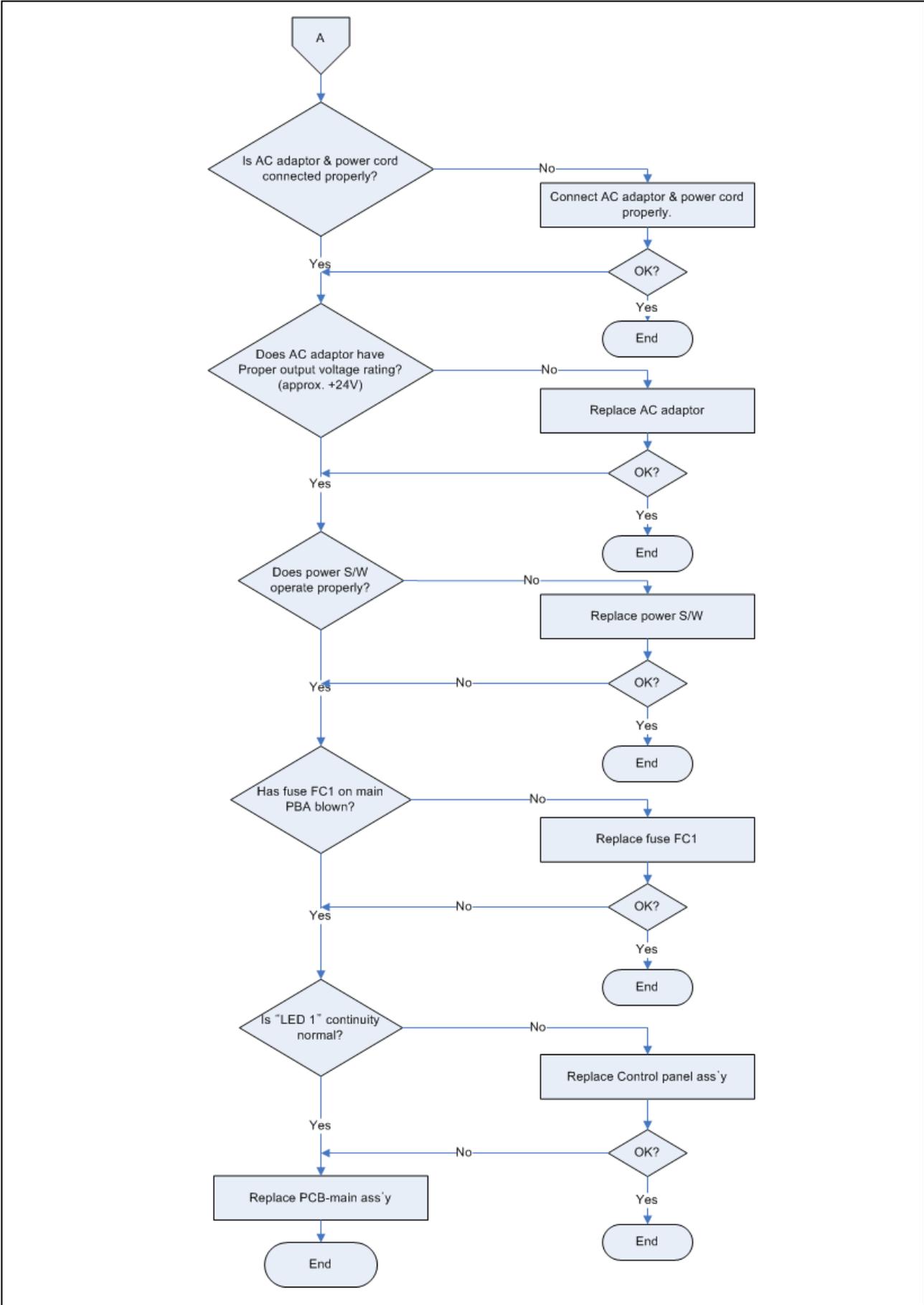
- Troubleshooting flow chart
When the source of the problem is not clear, use the flowchart to find and replace a defective component.
- Troubleshooting tables
Follow the steps outlined in these tables to repair a defect whose symptoms are known.

7-1 Trouble shooting flow chart

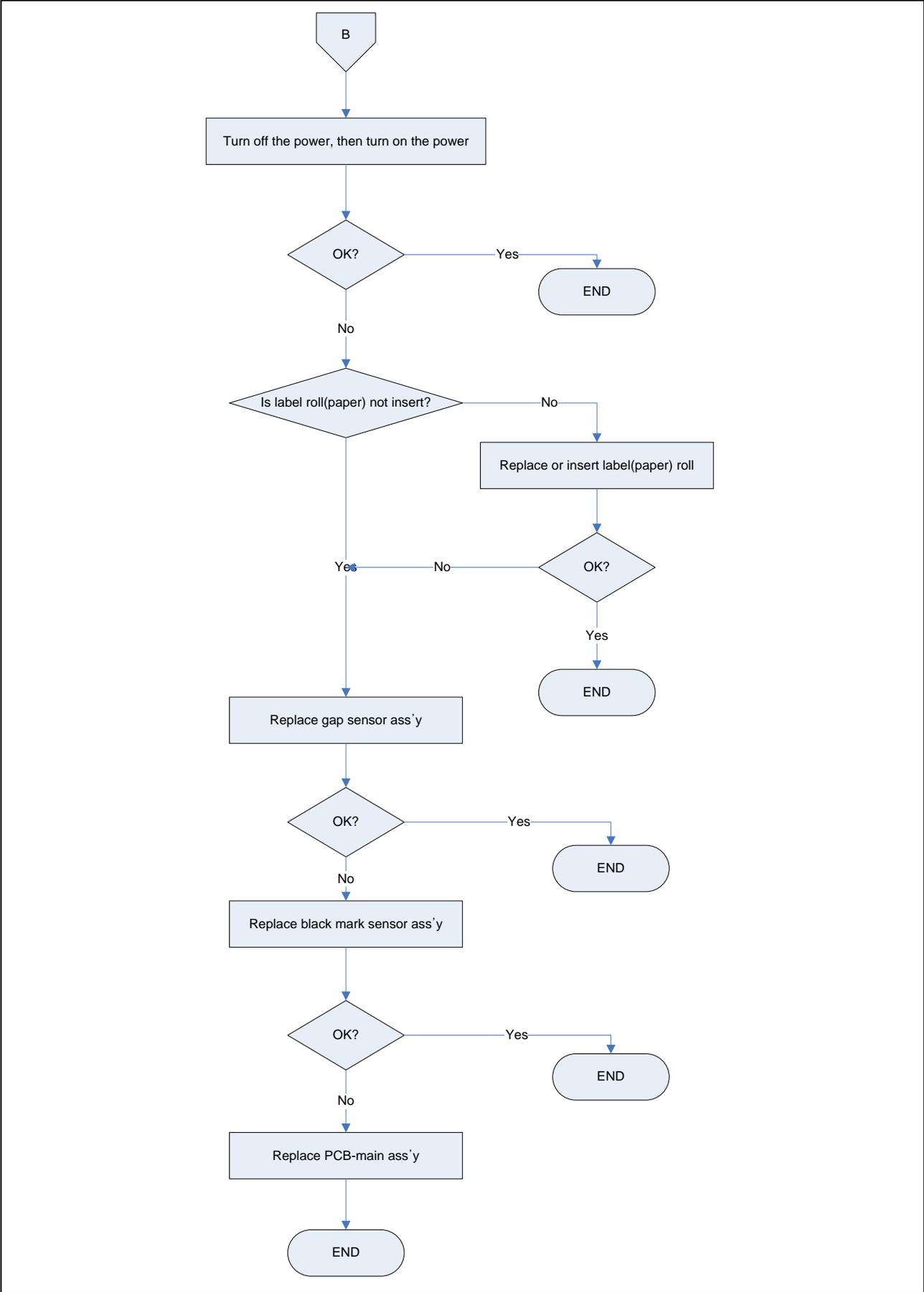
If the source of a problem is not clear, use the flowchart below to find and replace a defective component. Normally, servicing should be performed by component replacement. Repairs of the PCBs and other components should be performed only by technicians.



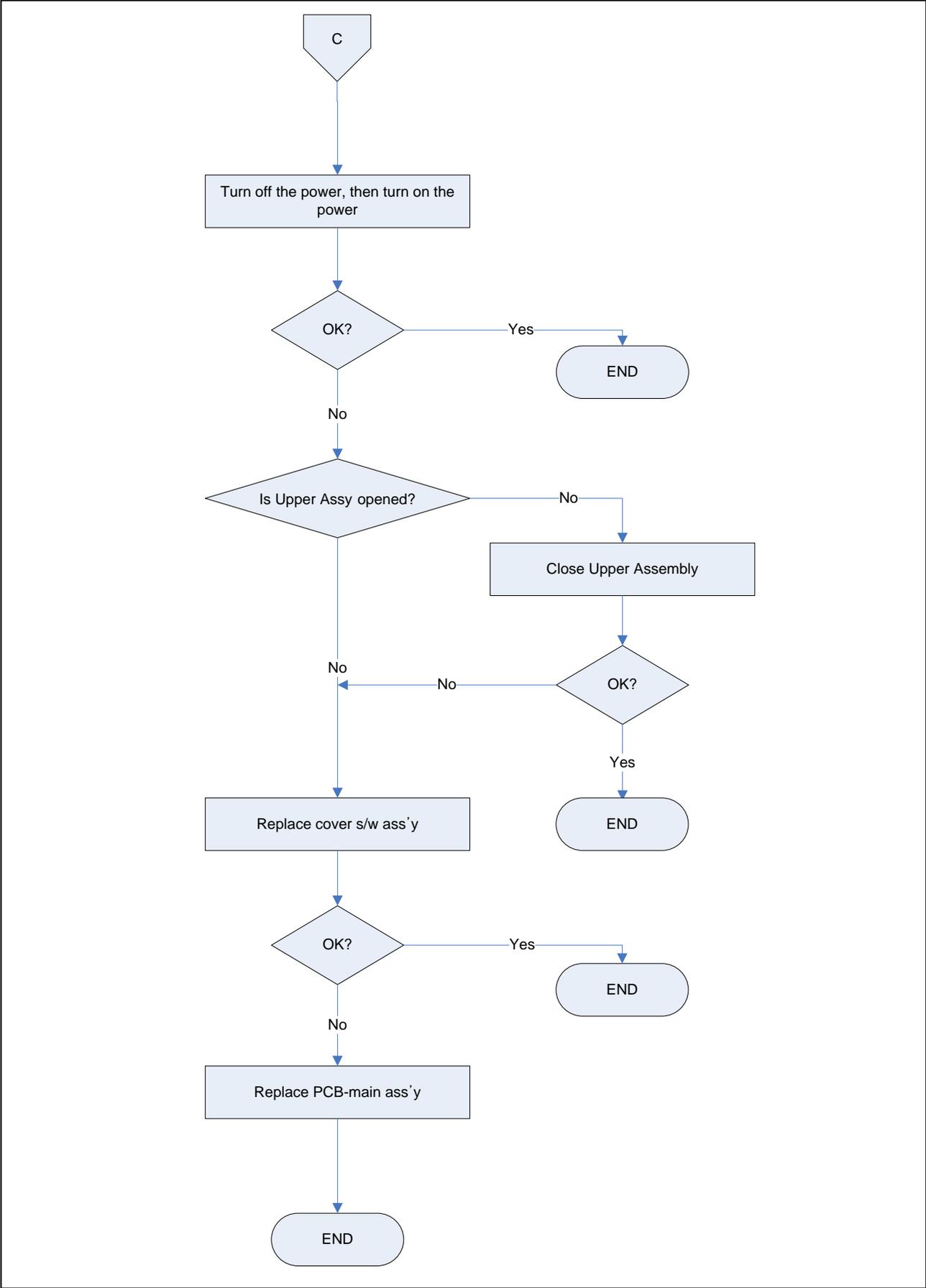
7-1-1 LED 1 dose not light



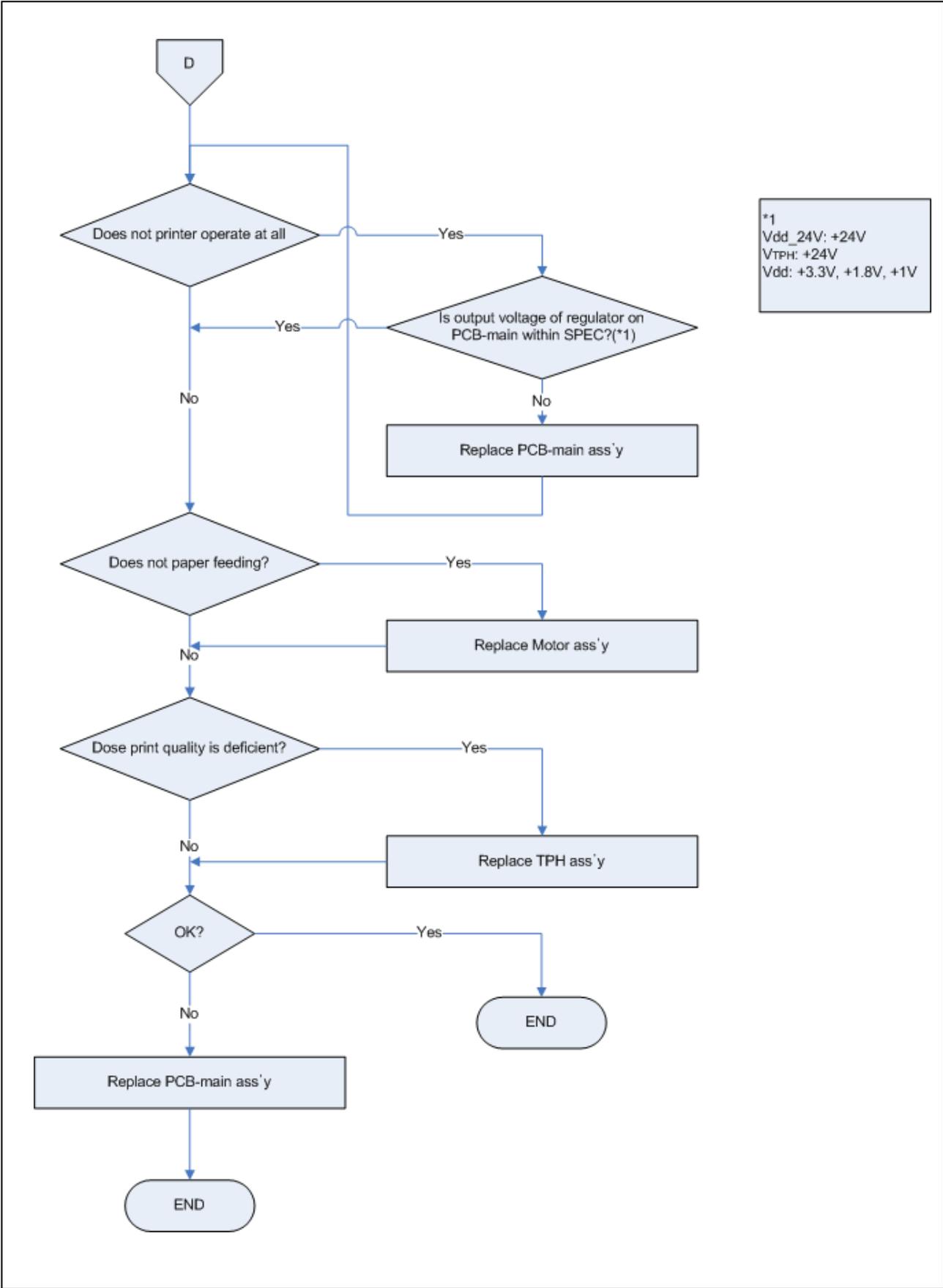
7-1-2 LED 2 is red blink



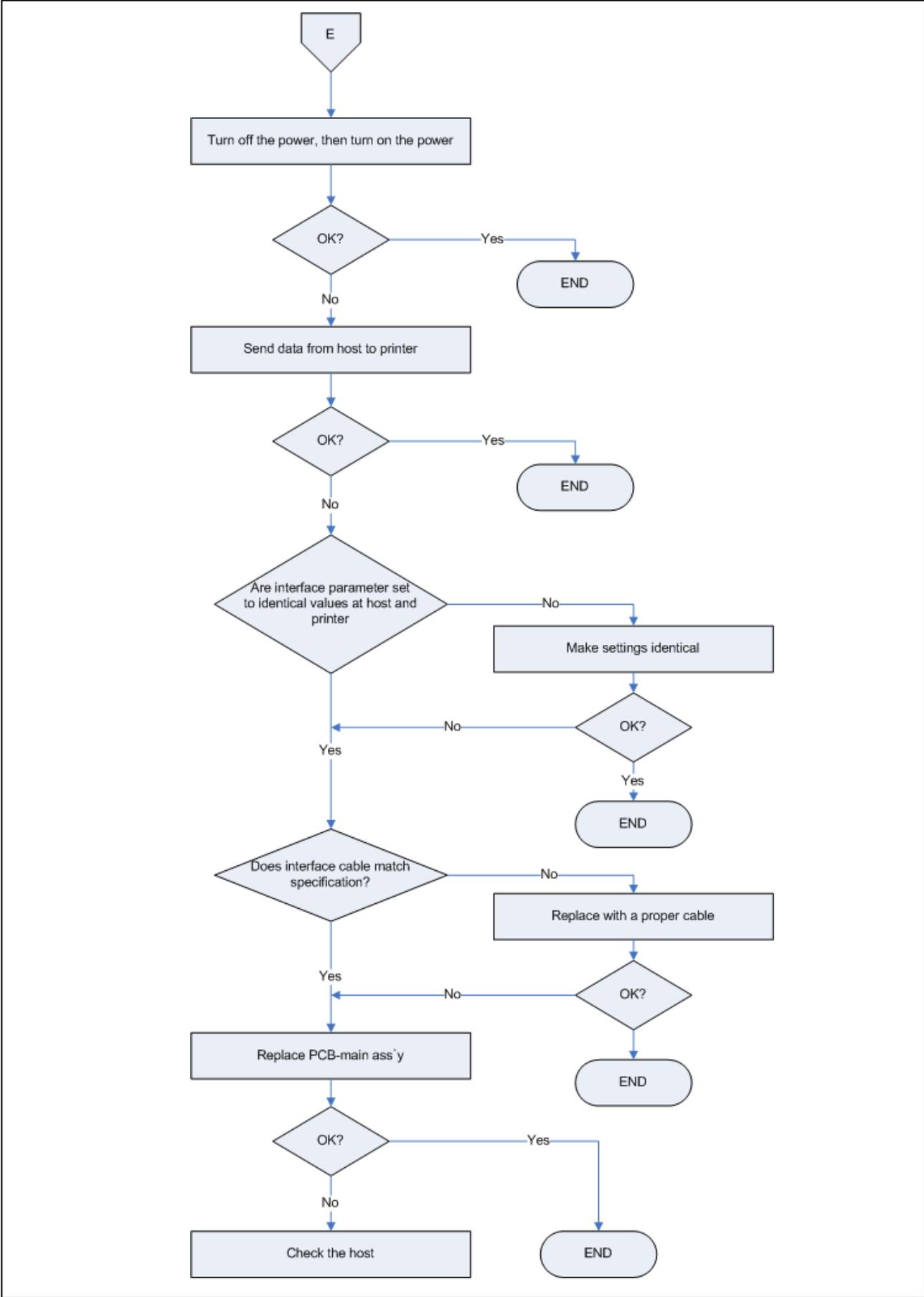
7-1-3 LED 2 is orange blink



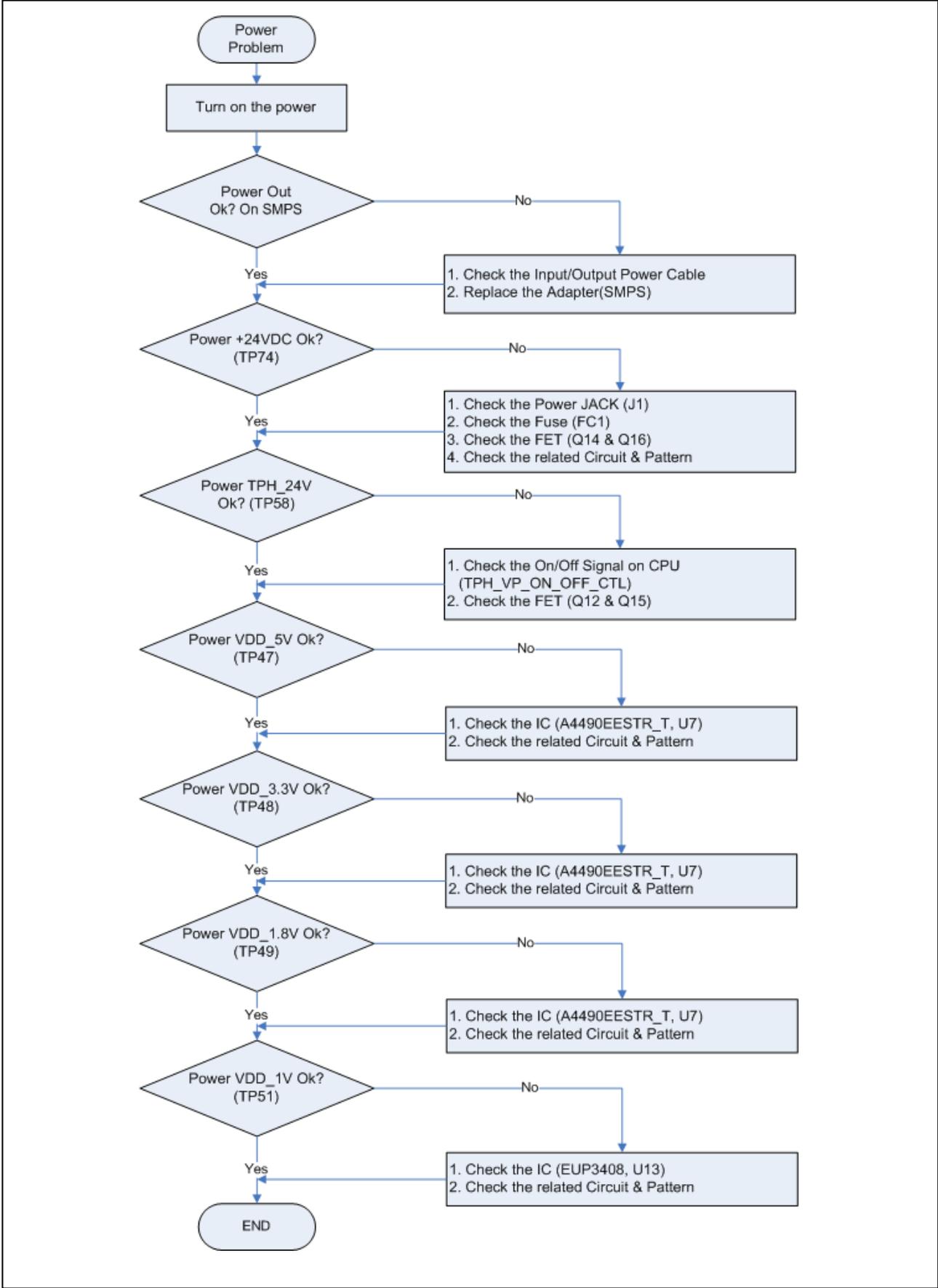
7-1-4 Self test is not normal



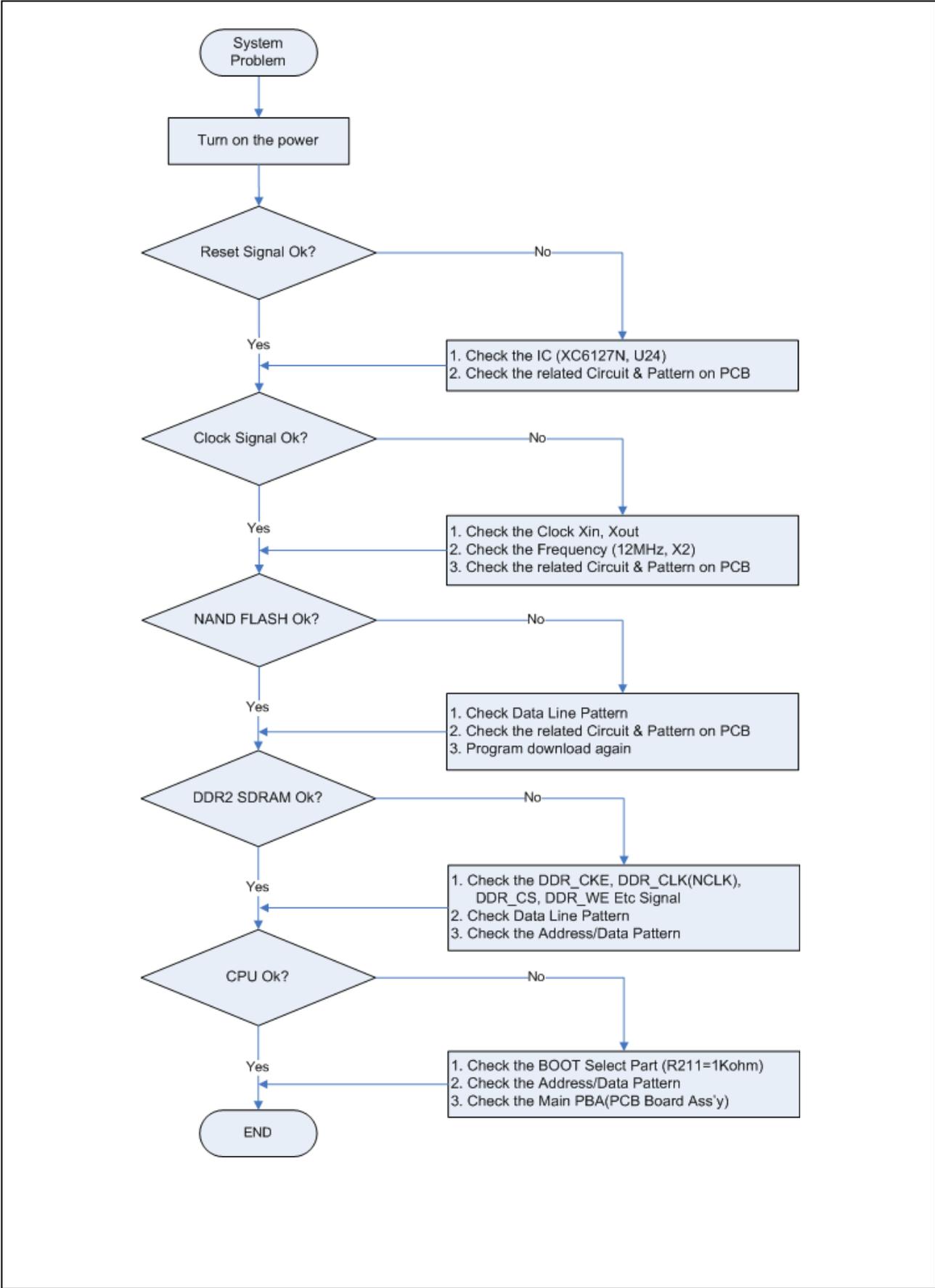
7-1-5 Data from host is not printed normal



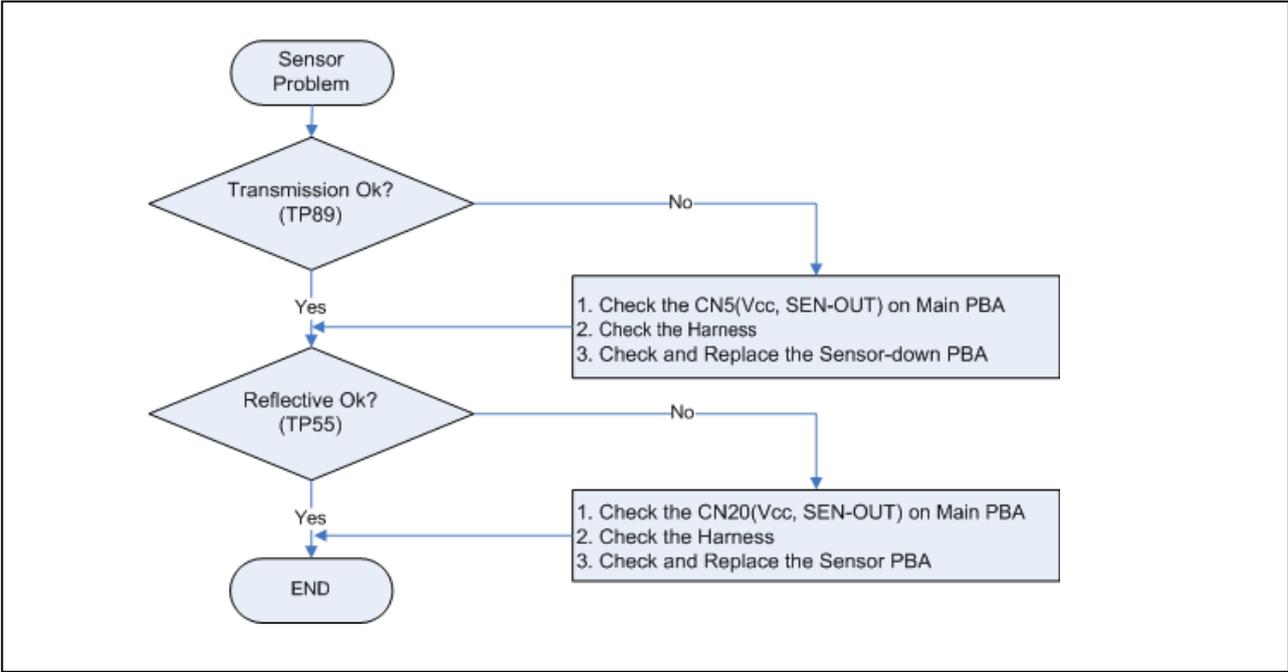
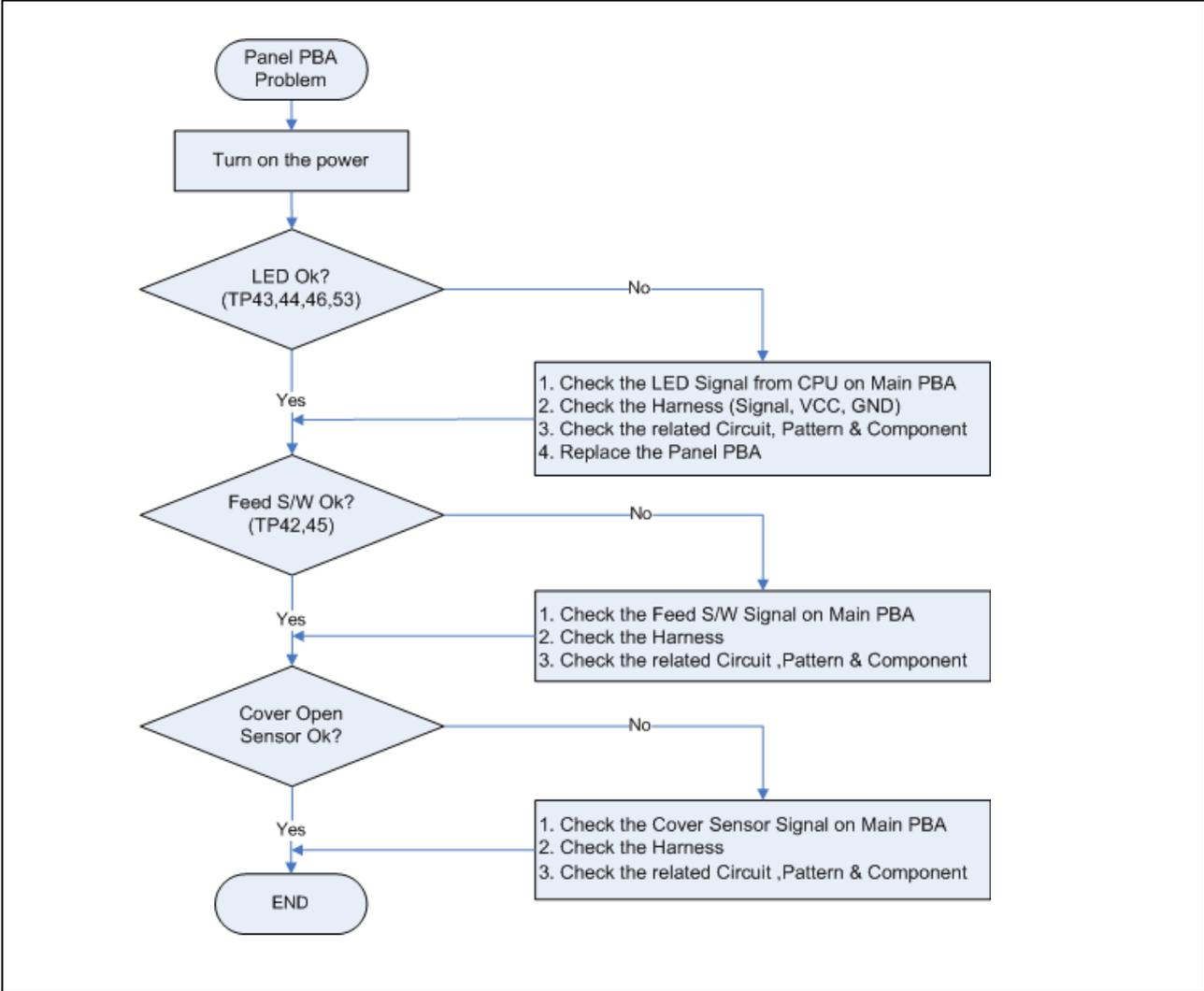
7-2 Power Problem



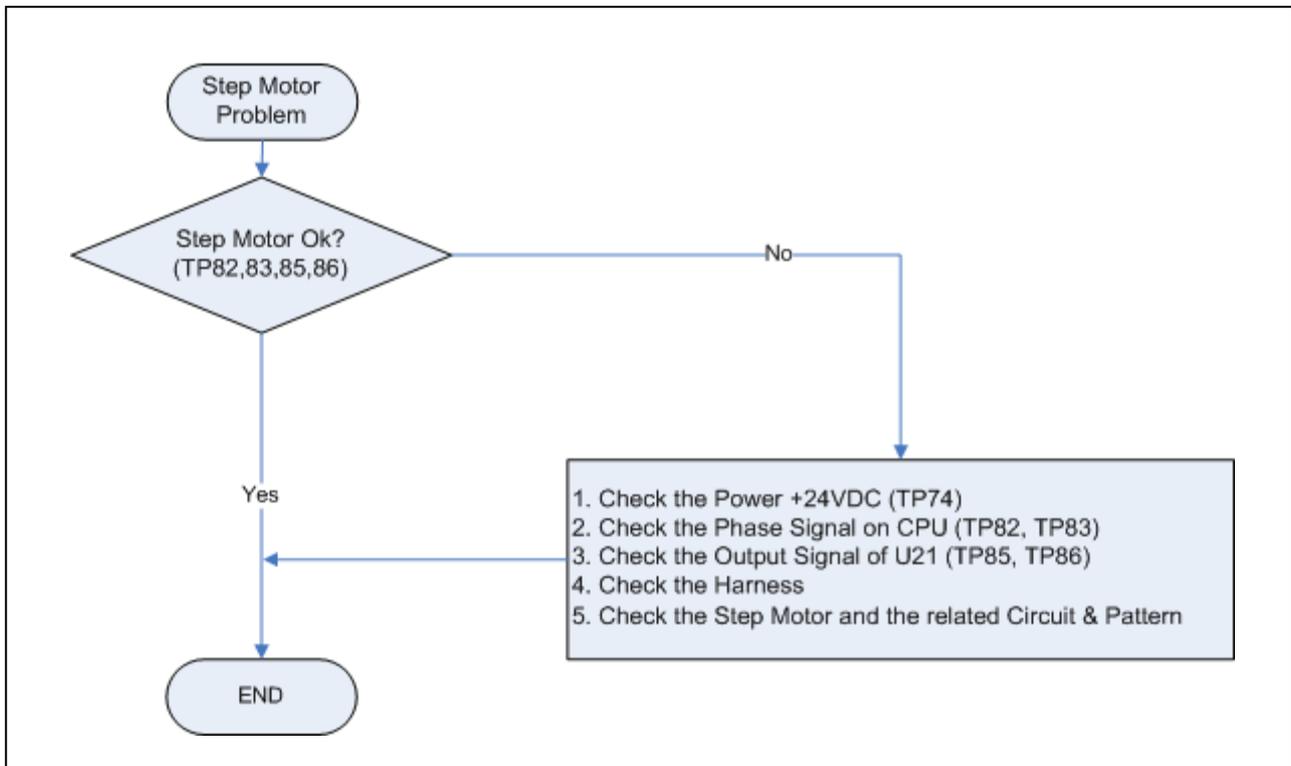
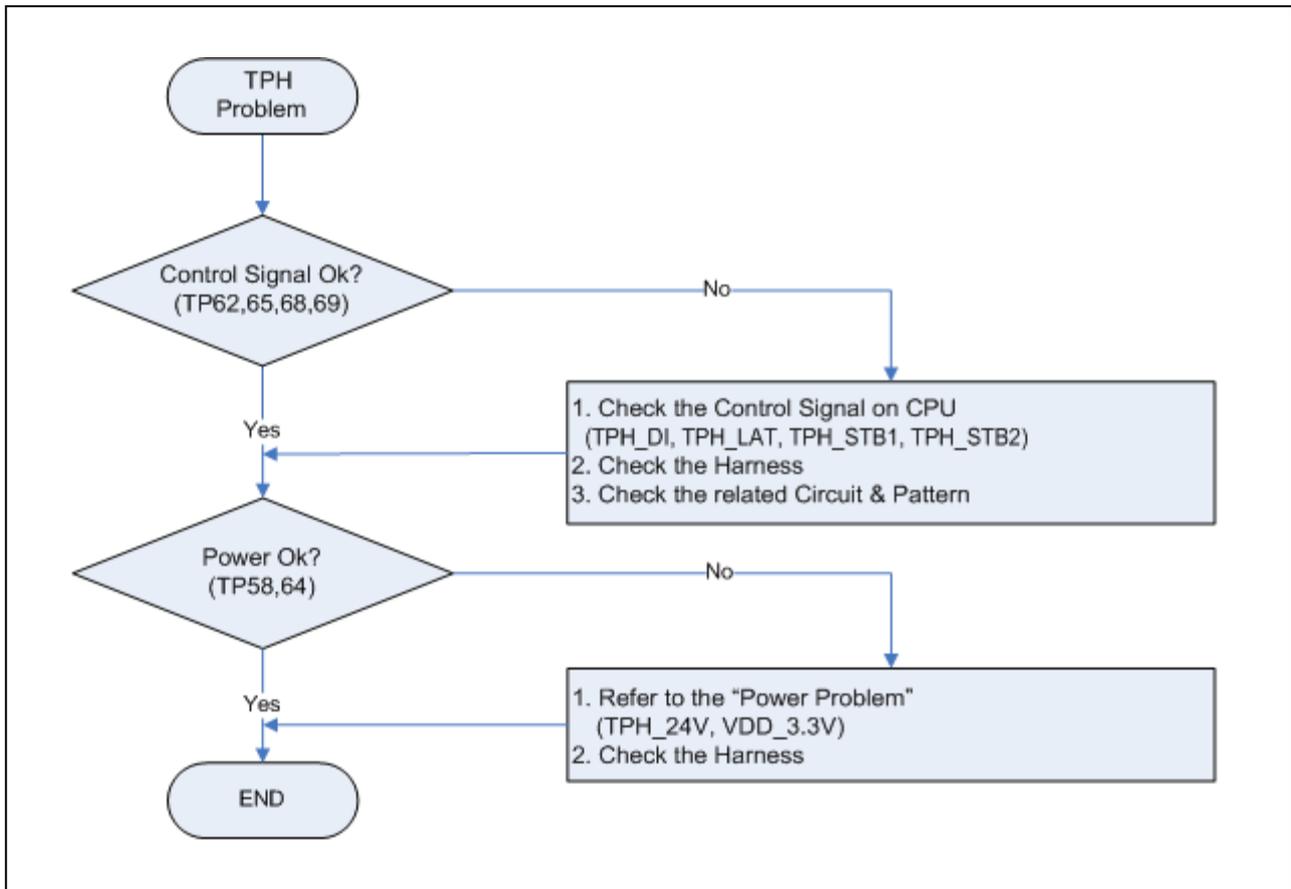
7-3 System Problem



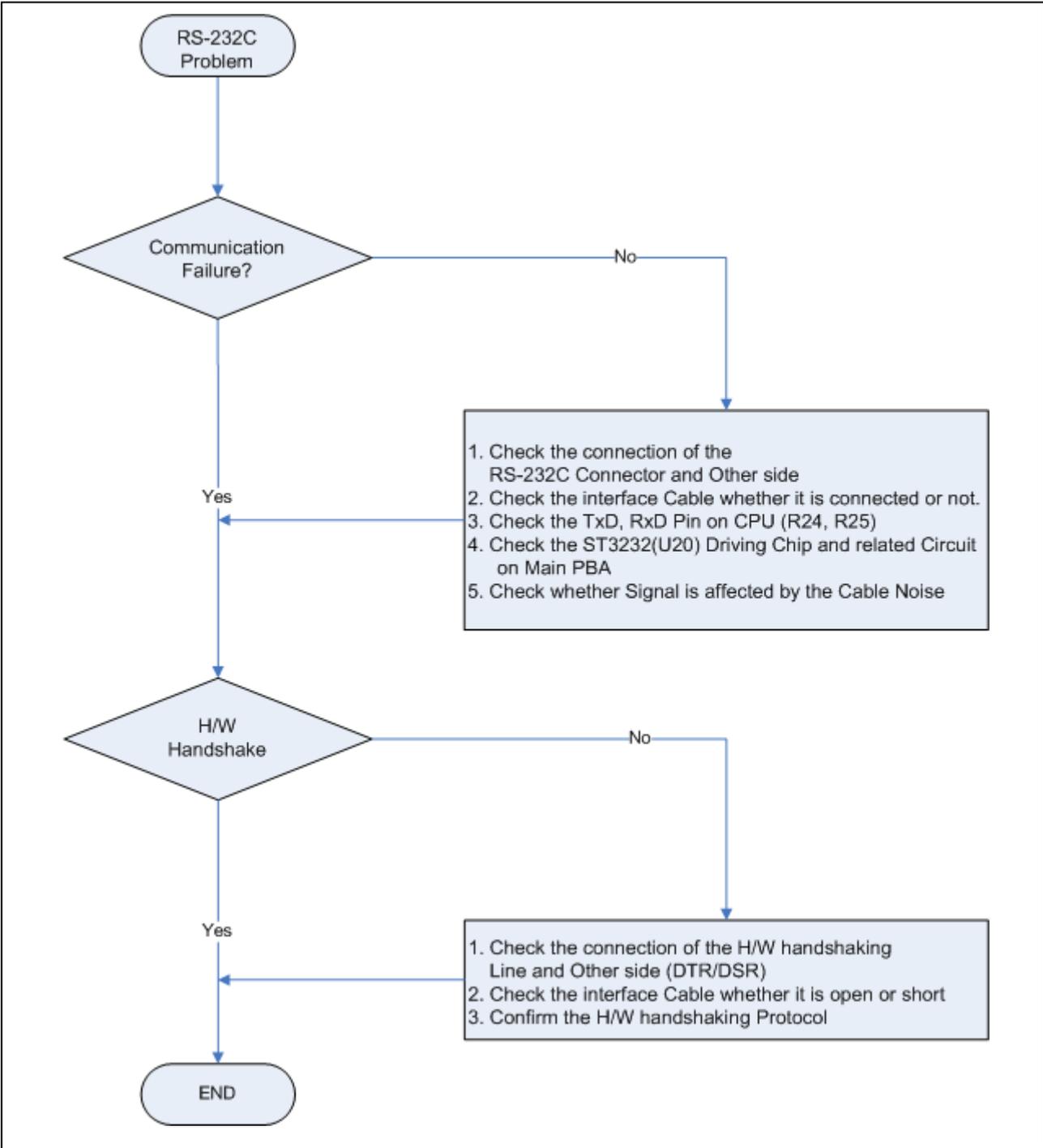
7-4 Panel PBA and Media Sensor Problem



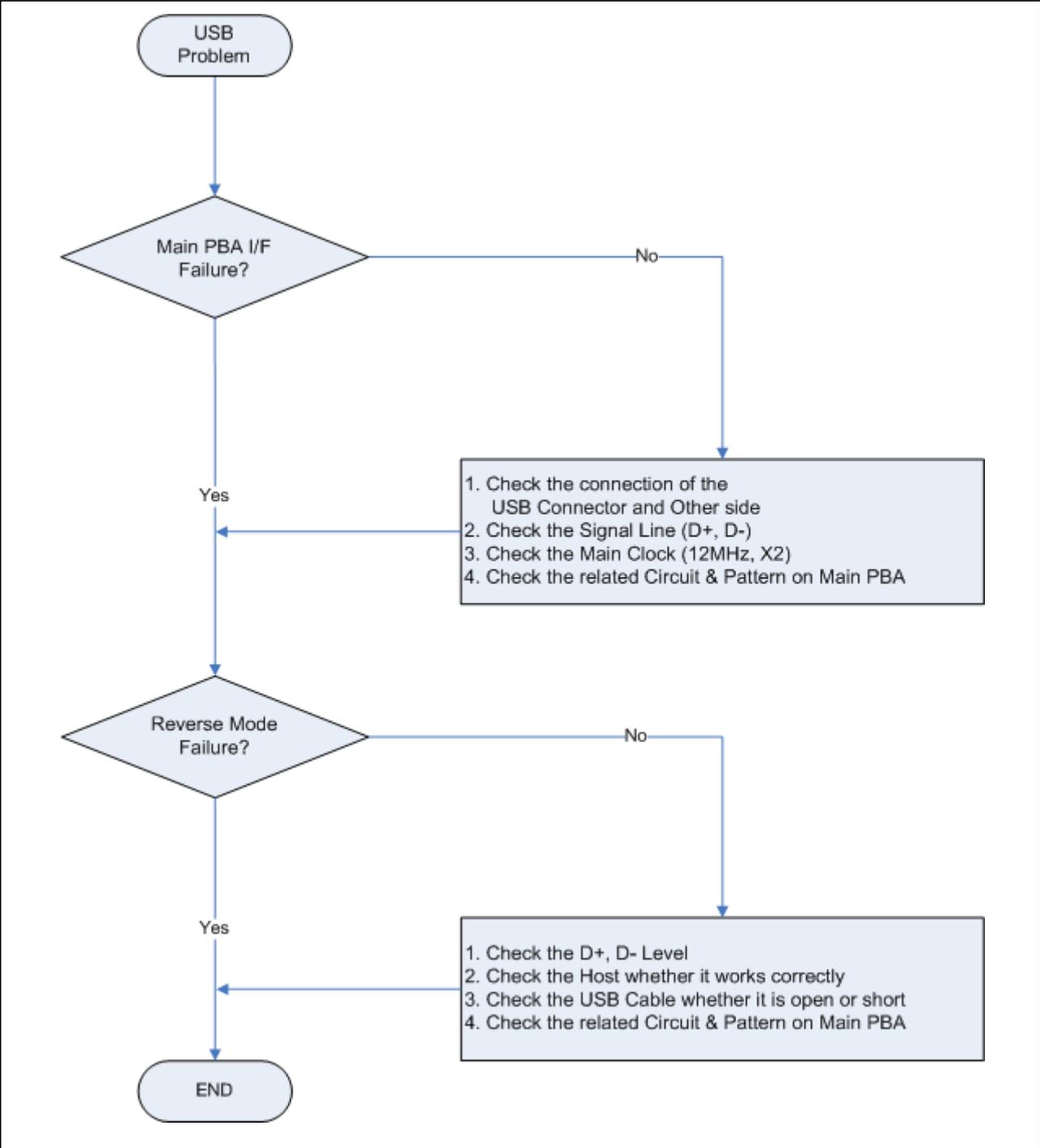
7-5 Thermal Printer Head and Step Motor Problem



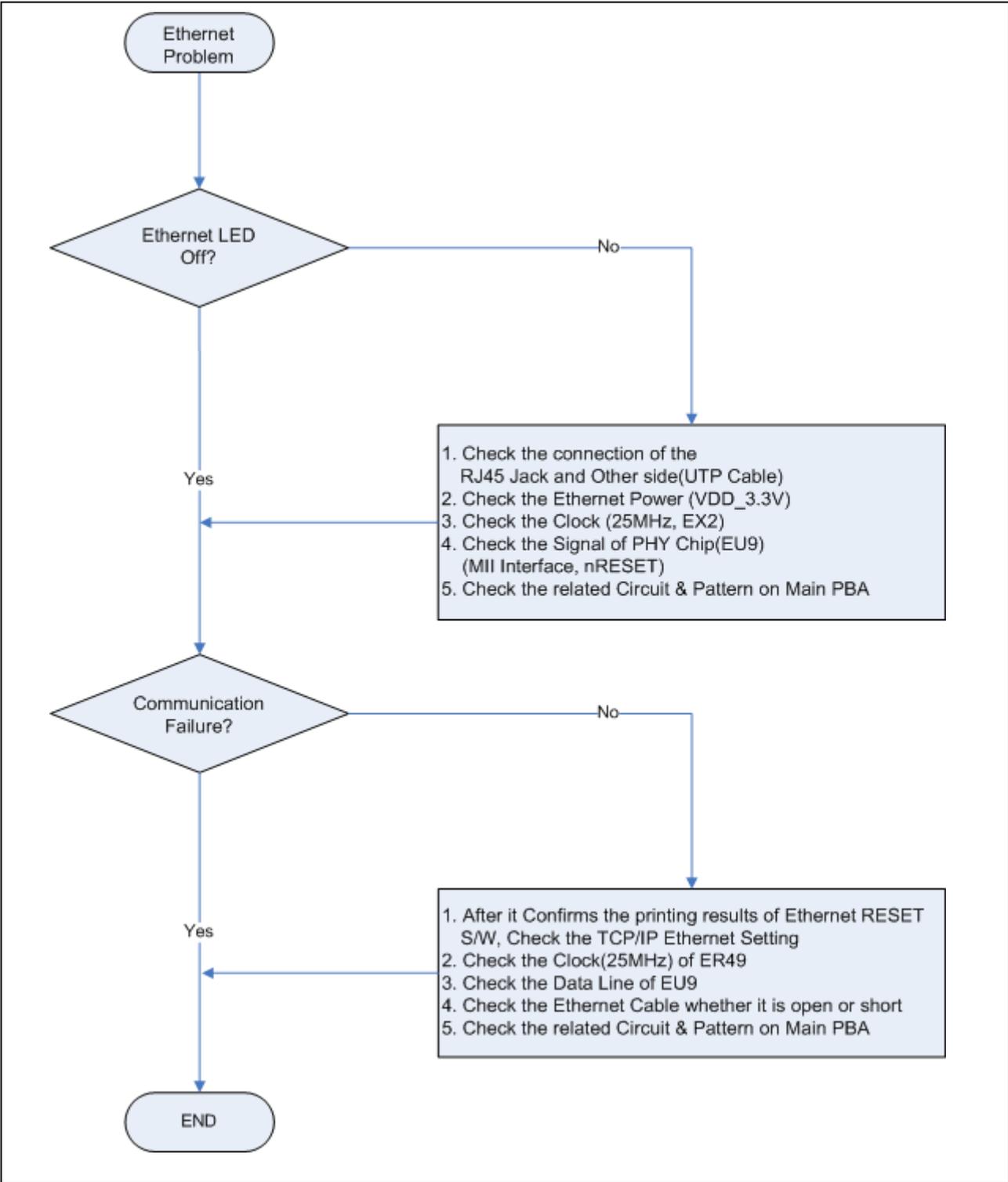
7-6 RS-232C Serial Communication Problem



7-7 USB Communication Problem



7-8 Ethernet Communication Problem



Copyright

© BIXOLON Co., Ltd. All rights reserved.

This user manual and all property of the product are protected under copyright law. It is strictly prohibited to copy, store, and transmit the whole or any part of the manual and any property of the product without the prior written approval of BIXOLON Co., Ltd. The information contained herein is designed only for use with this BIXOLON product. BIXOLON is not responsible for any direct or indirect damages, arising from or related to use of this information.

- The BIXOLON logo is the registered trademark of BIXOLON Co., Ltd.
- All other brand or product names are trademarks of their respective companies or organizations.

BIXOLON maintains ongoing efforts to enhance and upgrade the functions and quality of all our products.

In the following, product specifications and/or user manual content may be changed without prior notice.

Cautions When Using

Electronics, such as printers, are prone to damage by static electricity. Therefore, to protect the printer from static electricity, be sure to turn off the printer before connecting or disconnecting the cable to the rear of the printer. If the printer is damaged by static electricity, contact your local dealer.